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ABSTRACT

This collection of environmental education newsletters encompasses the issues published in 1978. The main topic covered in the first issue of the collection is the First Intergovernmental Conference on Environmental Education held in Tbilisi, USSR in October, 1977. The Tbilisi declaration resulting from that conference is discussed. The second issue presents brief descriptions of pilot projects in environmental education from various regions of the world. The third issue includes developments in national environmental education policy within selected nations following the Tbilisi conference. The fourth issue presents the International Environmental Education Activities proposed for 1979-80. (RE)

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UNESCO-UNEP ENVIRONMENTAL EDUCATION NEWSLETTER

U S DEPARTMENT OF HEALTH EDUCATION & WELFARE NATIONAL INSTITUTE OF EDUCATION

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Vol. III, No·1. January 1978

The world's first Intergovernmental Conference on Environmental Education, organized by Unesco in cooperation with the United Nations Environment Programme (UNEP), was convened in Tbilisi, Georgia (USSR), from 14 to 26 October 1977.

Delegates from 66 Member States and observers from two non-Member States participated as well as representatives and observers from eight agencies and programmes of the United Nations system, three other intergovernmental organizations and 20 international nongovernmental organizations. In all 265 delegates and 65 representatives and observers took part in the Tbilisi Conference.

The Conference was opened by Unesco's Director-General Amadou-Mahtar M'Bow and welcomed by a message of greeting from Leonid I. Brezhnev, Secretary General of the Communist Party of the USSR and Chairman of the Presidum of the Supreme Soviet of the USSR. Similarly participants were welcomed by Z.A. Pataridze, Chairman of the Council of Ministers of the Georgian SSR, host of the Tbilisi Conference. UNEP's Executive Director Mostafa K. Tolba then joined Mr. M'Bow in an address to the participants before they began almost two weeks of working sessions.

Adopted by acclamation at the close of the Intergovernmental Conference, the Tbilisi Declaration noted the harmony and consensus which had prevailed and the unanimous accord on the important role of environmental education in the preservation and improvement of the world's environment, as well as in the sound and balanced development of the world's communities. The Declaration follows in full.

The Tbilisi Declaration

In the last few decades, man has, through his power to transform his environment, wrought accelerated changes in the balance of nature. The result is frequent exposure of living species to dangers which may prove irreversible.

The Declaration of the United Nations Conference on Human Environment organized in Stockholm in 1972 proclaimed: "to defend and improve the environment for present and future generations has become an imperative goal for mankind." This undertaking urgently calls for new strategies, incorporated into development, which particularly in the developing countries is a prerequisite for any such improvement. Solidarity and equity in the relations between nations should constitute the basis of a new international order, and bring together, as soon as possible, all available resources. Education utilizing the findings of science and technology should play a leading role in creating an awareness and a better understanding of environmental problems. It must foster positive patterns of conduct towards the environment and nations' use of their resources.

Environmental education should be provided for all ages, at all levels and in both formal and nonformal education. The mass media have a great responsibility to make their immense resources available for this educational mission. Environmental specialists, as well as those whose actions and decisions can have a marked effect on the environment, should be provided in the course of their training with the necessary knowledge and skills and be given a full sense of their responsabilities in this respect.

Environmental education, properly understood, should constitute a comprehensive lifelong education,

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one responsive to changes in a rapidly changing world. It should prepare the individual for life through an understanding of the major problems of the contemporary world, and the provision of skills and attributes needed to play a productive role towards improving life and protecting the environment with due regard given to ethical values. By adopting a holistic approach, rooted in a broad interdisciplinary base, it recreates an overall perspective which acknowledges the fact that natural environment and man-made environment are profoundly interdependent. It helps reveal the enduring continuity which links the acts of today to the consequences for tomorrow. It demonstrates the interdependencies among national communities and the need for solidarity among all mankind.

Environmental education must look outward to the community. It should involve the individual in an active problem-solving process within the context of specific realities, and it should encourage initiative, a sense of responsibility and commitment to build a better tomorrow. By its very nature, environmental education can make a powerful contribution to the renovation of the educational process.

In order to achieve these goals, environmental education requires a number of specific actions to fill the gaps which, despite outstanding endeavours, continue to exist in our present education system.

Accordingly, the Tbilisi Conference:

Appeals to Member States to include in their educational policies measures designed to introduce environmental concerns, activities and contents into their education systems, on the basis of the above objectives and characteristics;

Invites educational authorities to promote and intensify thinking, research and innovation in regard to environmental education;

Urges Member States to collaborate in this field, in particular by exchanging experiences, research findings, documentation and materials and by making their training facilities widely available to teachers and specialists from other countries; and lastly,

Appeals to the international community to give generously of its aid in order to strengthen this collaboration in a field which symbolizes the need for solidarity of all peoples and may be regarded as particularly conducive to the promotion of international understanding and to the cause of peace.

The Role, Objectives and Characteristics of Environmental Education

The Tbilisi Declaration together with two of the recommendations of the Conference constitutes the framework, principles and guidelines for environmental education at all levels — local, national, regional and international — and for all age groups both inside and outside the formal school system.

I. The Conference *recommends* the adoption of certain criteria which will help to guide efforts to develop environmental education at the national, regional and global levels:

- Whereas it is a fact that biological and physical features constitute the natural basis of the human environment, its ethical, social, cultural and economic dimensions also play their part in determining the lines of approach and the instruments whereby people may understand and make better use of natural resources in satisfying their needs.
- Environmental education is the result of the reorientation and dovetailing of different disciplines and educational experiences which facilitate an integrated perception of the problems of the environment, enabling more rational actions capable of meeting social needs to be taken.
- A basic aim of environmental education is to succeed in making individuals and communities understand the complex nature of the natural and the built environments resulting from the interaction of their biological, physical, social, economic and cultural aspects, and acquire the knowledge, values, attitudes and practical skills to participate in a responsible and effective way in anticipating and solving environmental problems, and in the management of the quality of the environment.
- A further basic aim of environmental education is clearly to show the economic, political and ecological interdependence of the modern world, in which decisions and actions by the different countries can have international repercussions. Environmental education should, in this regard, help to develop a sense of responsibility and solidarity among countries and regions as the foundation for a new international order which will guarantee the conservation and improvement of the environment.
- Special attention should be paid to understanding the complex relations between socio-economic development and the improvement of the environment.
- For this purpose, environmental education should provide the necessary knowledge for interpretation of the complex phenomena that shape the environment, encourage those ethical, economic and esthetic values which, constituting the basis of self-discipline, will further the development of conduct compatible with the preservation and improvement of the environment; it should also provide a wide range of practical skills required in the devising and application of effective solutions to environmental problems.
- To carry out these tasks, environmental education should bring about a closer link between educational processes and real life, building its activities around the environmental problems that are faced by particular communities and focusing analysis on these by means of an interdisciplinary, comprehensive approach which will permit a proper understanding of environmental problems.
- Environmental education should cater to all ages and socio-professional groups in the population. It should be addressed to (a) the general non-specialist public of young people and adults whose daily conduct has a decisive influence on the preservation and improvement of the environment; (b) to particular social groups whose professional activities affect the quality of the environment; and (c) to scientists and technicians whose specialized research and work will lay the foundations of knowledge on which education, training and efficient management of the environment should be based.
- To achieve the effective development of environmental education, full advantage must be taken of all public and private facilities available to society for the education of the population: the formal education system, different forms of nonformal education, and the mass media.

• To make an effective contribution towards improving the environment, educational action must be linked with legislation, policies, measures of control and the decisions that governments may adopt in relation to the human environment.

II. The Conference *endorses* the following goals, objectives and guiding principles for environmental education:

The *goals* of environmental education are:

• to foster clear awareness of, and concern about, economic, social, political and ecological interdependence in urban and rural areas;
• to provide every person with opportunities to aquire the knowledge, values, attitudes, commitment and skills needed to protect and improve the environment;
• to create new patterns of behaviour of individuals, groups and society as a whole towards the environment.

The categories of environmental education *objectives* are:

Awareness: to help social groups and individuals acquire an awareness and sensitivity to the total environment and its allied problems.

Knowledge: to help social groups and individuals gain a variety of experience in, and acquire a basic understanding of, the environment and its associated problems.

Attitudes: to help social groups and individuals acquire a set of values and feelings of concern for the environment and the motivation for actively participating in environmental improvement and protection.

Skills: to help social groups and individuals acquire the skills for identifying and solving environmental problems.

Participation: to provide social groups and individuals with an opportunity to be actively involved at all levels in working toward resolution of environmental problems.

Guiding principles — environmental education should:

• consider the environment in its totality — natural and built, technological and social (economic, political, cultural-historical, moral, esthetic);
• be a continuous lifelong process, beginning at the pre-school level and continuing through all formal and nonformal stages;
• be interdisciplinary in its approach, drawing on the specific content of each discipline in making possible a holistic and balanced perspective;
• examine major environmental issues from local, national, regional and international points of view so that students receive insights into environmental conditions in other geographical areas;
• focus on current and potential environmental situations while taking into account the historical perspective;
• promote the value and necessity of local, national and international cooperation in the prevention and solution of environmental problems;
• explicitly consider environmental aspects in plans for development and growth;
• enable learners to have a role in planning their learning experiences and provide an opportunity for making decisions and accepting their consequences;
• relate environmental sensitivity, knowledge, problem-solving skills and values clarification to every age, but with special emphasis on environmental sensitivity to the learner's own community in early years;
• help learners discover the symptoms and real causes of environmental problems;
• emphasize the complexity of environmental problems and thus the need to develop critical thinking and problem-solving skills;
• utilize diverse learning environments and a broad array of educational approaches to teaching/learning about and from the environment with due stress on practical activities and first-hand experience.

Opening Ceremony of Tbilisi Conference

In his message of welcome, which was read on opening day, Mr. Leonid I. Brezhnev stressed that "further progress in the economic, scientific and cultural fields must take into account the consequences of human action on nature; and it is clear that development of a considerate and careful attitude to the environment, together with dissemination of the knowledge and skills necessary for its protection and improvement, should become an integral part of the general system of education and training." The Chairman concluded: "May I wish your Conference success in carrying out the noble tasks before it."

In his address, UNEP's Executive Director Mostafa K. Tolba emphasized the importance of everyone — planner, builder, farmer or general citizen — becoming "environmentally conscious through proper environmental education." Further, that "environmental education is essential in integrating the knowledge generated by the important UN conferences of the past five years — on the human environment, on population, food, human settlements, water and desertification." In this connection, Dr. Tolba described the role of UNEP in relation to environment and its cooperation with Unesco in particular and with other agencies of the UN system, as well as with nongovernmental organizations, with respect to environmental education.

Unesco's Director-General Amadou-Mahtar M'Bow expressed his appreciation for the host country's cordial welcome, then thanked Dr. Tolba for the contribution UNEP had made to the organization of the Tbilisi Conference, the first of its kind on a worldwide basis. Unesco itself, he said, had very early been concerned with environmental problems, but the concept of environment had evolved: initially confined to its physical and biological aspects, it now also covered the social, economic and technological environment.

With regard to the role and nature of environmental education, Mr. M'Bow continued, "We have now passed the stage of exchanging fragmentary information and knowledge on specific environmental problems, such as that of pollution, the deterioration of the natural environment or the conservation of resources. A more ambitious task now faces the international community: that of devising and putting into effect a type of education and training which will enable individuals of all ages and from all backgrounds to assimilate the values, the basic concepts and the practical knowledge which will help them to an awareness of environmental problems, help them to adapt their everyday behaviour accordingly and thus make a useful contribution to the joint effort to safeguard the environment...

"Lastly, environmental education [should] help to develop in members of every community — in different ways, of course, depending on the groups involved — a

body of knowledge and a critical sense enabling them to be informed participants in the planning, implementation and monitoring of measures to preserve and improve the environment." This last, in turn, means an interdisciplinary, lifelong education with a problem-solving approach. "It is not enough for environmental education to be an adjunct to the normal curriculum. Environmental concerns must be seen as an ever-present dimension and function of education in the broadest sense of the term, whether in-school or out-of-school, in all its forms and at all levels."

Recommended Policies and Strategies

After the opening ceremony, the Tbilisi Conference adopted an agenda whose principal items were the following: (1) major environmental problems in contemporary society; (2) the role of education in facing the challenges of environmental problems; (3) current efforts at the national and international levels for the development of environmental education; (4) strategies for the development of environmental education at the national level; and (5) regional and international cooperation for the development of environmental education: needs and modalities. (For details on the provisional agenda, working documents, background and preparations for the Tbilisi Conference, see *Connect*, Vol. II, No. 2. For full, *official* texts of all recommendations plus an annex of Conference agenda, participants and speeches, see *Final Report* of the Tbilisi Conference, available spring 1978 on request to Unesco, address on last page of this issue.)

Environmental problems and the role of education

Participants from all regions agreed that growing recognition of the implications and consequences of environmental problems must be coupled with an increasing awareness of solidarity among nations. Improved management of the environment to serve humanity should aim at reducing disparities, and at bringing about international relations based on equity, in the perspective of a new international order. Here environmental education has an evident role to play if the issues involved are to be grasped and if all concerned are to acquire the knowledge, skills and social attitudes which can modify the existing situation for the better.

Moreover, models of growth and development must be reconsidered. It has become necessary to distinguish between the essentials and the "luxuries" for environment as well as development. This was considered another reason for a holistic approach to the study of environmental problems, which requires the contribution of all natural, social and human sciences for their analysis and solution. Nor was their ethical dimension viewed as less important in any way.

One formal recommendation succinctly indicates the general conclusion: "The Conference recommends that governments systematically evaluate the environmental impact of development activities, and requests that development assistance strategies and programmes provide opportunities for countries to establish environmental training programmes which include the evaluation of development from the standpoint of the human environment."

Another recommendation similarly spells out the Conference's view of the role of education in the context of environmental problems and sound eco-development (see above, p. 2).

Current efforts

National reports prepared for the Conference and statements of the delegations testify to the significant advances made by a number of countries towards implementing environmental education programmes both inside and outside the school system. Important as these efforts and achievements may be—and participants gave encouraging evidence to this effect—there are still gaps and shortcomings. Less seems to have been achieved at the secondary level than at the primary level in schools both quantitatively and in terms of innovation. Little has been done for training out-of-school educators or in-service teachers in environmental matters. There are still far too few trained for the teaching of ecology or capable of effective participation in a multidisciplinary approach. Last, but most important, there still appears to be a considerable need for developing or refining overall environmental education strategies in all forms and at all levels of education.

Strategies at the national level

To achieve the objectives of environmental education, the Conference recommended that each country set up or strengthen the *appropriate organizational structures*, which could include representatives of educational and environmental protection authorities, practising teachers at different levels, organizations concerned with environmental education and the mass media, etc., for the following functions: (1) to facilitate relations with Unesco, UNEP and other organizations involved in environmental education (EE); (2) to coordinate EE initiatives; (3) to serve as a consultative body in EE at the governmental level; (4) to play a role as a clearinghouse and information centre in EE; (5) to develop in various social and occupational groups an awareness and knowledge about the issues associated with EE in the country; (6) to promote collaborative relationships among EE associations, citizen groups and the scientific, research and education communities; (7) to provide frameworks and guidelines for the establishment of EE action committees within the country; (8) to assess the need for EE research, development and evaluation; and (9) to encourage and facilitate the contribution to EE programmes for nongovernmental organizations, including voluntary bodies.

Programmes and curricula.—EE should not be just one more subject to add to existing programmes but should be incorporated into programmes intended for all learners, whatever their age. A new joint pattern of work should be drawn up, involving home, community and school, to introduce young people to environmental issues. Environmental education should serve as a catalyst or common denominator in the renewal of contemporary programmes and curricula.

In this connection, the Conference recommended that:

- subject disciplines identify and give priority to their special contribution to environmental education; and those responsible for the planning and implementation of general and vocational programmes encourage interdepartmental collaboration and coordination so that environmental goals and objectives may be achieved;
- responsible authorities support curriculum devel-

opment as it relates to particular situations such as exist in urban areas, rural areas and areas of special historical and cultural importance, and to the needs of particular groups, such as farmers, industrial workers and parents;

- that institutions engaged in the development of curricula, teaching programmes and materials for EE study the problems linked with single subject, multidisciplinary and interdisciplinary approaches respectively; consider the suitability of each approach to different situations and learning groups; and identify the potentially most effective contribution of such subject areas as the natural sciences, the social sciences and technology;
- full and adequate emphasis be given to the teaching of ecological concepts, to the systems of the atmosphere, lithosphere, hydrosphere and biosphere and to relevant socio-economic aspects.

Educational programmes on the *work environment*, in the factory, field, office, mine, etc., received special consideration. It was recommended that (1) curricula for specific trades and professions should include education concerning the work environment of the pertinent trade or profession, including information about medical standards for permissible levels of environmental pollution, noise, vibration, radiation and other factors affecting work conditions, as well as a system for monitoring their enforcement; (2) decision-makers, consultants and other key persons affecting the work environment should be educated on its problems and possible solutions; and (3) people on the job should be given the opportunity of acquiring similar knowledge about their particular work environment.

Lastly it was recommended that (1) producers and consumers in general and national consumer organizations in particular give more educational attention to environmentally detrimental consumption behaviour; (2) mass media be more concerned about their educational role in forming consumption behaviour; and (3) educational authorities promote the inclusion of that aspect in programmes of formal and nonformal education.

Methods — In formal education, at all levels, account should be taken of all the ingredients of the education process (programmes and curricula, books and textbooks, teaching aids and resources, methods, etc.) and interdisciplinarity should thus be gradually achieved. The requirement is, without repudiating the existence and individual character of each traditional discipline, to avoid the over-analytical nature of subject disciplines and the differences stemming from their respective methodologies, which make it difficult for the learner to apprehend the environment: he often lacks a proper framework and, moreover, the usual approach by successive abstractions sets him at a certain remove from the subject under study. The solutions are thus:

- to introduce into each subject the essential environmental dimension;
- to have curricula prepared by interdisciplinary teams;
- to study practical problems, that is, the reality surrounding pupils and teachers.

The central idea is to attain, by means of growing interdisciplinarity and of prior coordination of disciplines, a practical education oriented toward a solution of the problems of the environment, or at least to make pupils better equipped for their solution by teaching them to participate in decision making.

The success of environmental education will not lie merely in bringing about a number of changes in the system and methods of education. This task requires the application of new concepts, new methods and new techniques as part of an overall effort stressing the social role of educational institutions and the establishment of a new relationship between all those engaged together in the education process. To this end, legislative measures may be taken providing the State with a legal framework in which to draw up an environmental education system for the entire community.

Although environmental education should constitute one single organic and continuous process, each stage of this process has its own particular educative value.

In primary school, for instance, a few useful directions in which to promote environmental education would be: programmes of visits, the use of free time for activities in close contact with the environment, the development of a critical faculty and ability to see things in the round, and the transcending of the cultural and scientific levels so as to gain an awareness of relations with the community and move towards solutions.

Secondary schooling should take the pupil on to a more ecologically, socially, politically and economically based application of ideas about the environment. University-level education should see the introduction, as a basis for all specialized courses (for engineers, architects, planners, economists, et al.), of thorough knowledge of the functioning of ecosystems and an insight into the socio-economic factors governing the relations between people and the environment, together with knowledge of the characteristics, limits and possibilities of the scientific and technical revolution.

In nonformal and out-of-class education, strategies for the introduction, promotion and development of environmental education depend on particular situations (e.g., rural setting or urban setting; occupations, socio-cultural background, etc.). They should be based on channels of social communication, on the mass media and on the various movements or associations. In addition to their special educational role, these activities are of vital importance since they make it possible to overcome many of the administrative or bureaucratic difficulties associated with formal education.

Teaching/learning materials — In this category, participants recommended that:

- relevant authorities work out criteria on which to base the environmental content of the curricula to be offered to pupils and students according to individual needs and taking into account local, social, occupational and other factors; more specifically, basic principles should be formulated for the preparation of model textbooks and reading materials for use at all levels within formal and non-formal systems;
- in developing low-cost teaching aids and materials, the fullest use should be made of existing documentation, and educational research findings should be drawn upon, the value of existing teaching materials should be assessed and new teaching aids for environmental education should be developed as necessary;
- teachers and learners should be involved in the preparation and adaptation of instructional materials for environmental education;
- teachers in training should be given an understanding of as wide a range as possible of educational

materials and aids, with special reference to low-cost materials and opportunities for adaptation and improvisation in local circumstances.

Research, innovation and evaluation — Similarly in this category, the recommendation of the Conference to Member States is specific and detailed, namely, that:

- they develop national policies and strategies furthering environmental education research projects and incorporate their findings into the general educational process through appropriate courses;
- they carry out research concerning the goals and objectives of environmental education, the epistemological and institutional structures that affect consideration of environment demands, and the knowledge and attitudes of individuals, in order to identify more precisely the most effective educational conditions, types of action by teachers and processes of assimilation of knowledge by pupils, as well as obstacles to the modification of concepts, values and attitudes held by individuals, and the use of these concepts, values and attitudes in relation to environmental behaviour;
- they undertake research concerning the conditions that foster development of environmental education, directed more particularly towards: identification of content, taking into consideration specific national and local features which might constitute an effective basis for educational programmes for those in and out of the formal education system as well as for specialists; the establishment of methodologies for the effective acquisition of the relevant concepts, values and attitudes by the various population groups, young and adult, receiving formal and non-formal education; and innovation in learning environments;
- they undertake research for the development of educational methods and curricula in order to sensitize the general public, particularly with regard to use of the mass media and the preparation of evaluation tools for assessing the impact of such curricula;
- they include in the courses of initial and in-service training of teachers, research methodologies for designing and developing methods and instruments which enable them to effectively fulfil the objectives of environmental education;
- they undertake research with a view to the design and development of purpose-built instructional systems, methods and materials enabling interdisciplinary environmental curricula to be developed. With this in mind, the possibility of using elements of the natural and social sciences and the arts as a basis for integration, should be studied;
- they undertake research in order to develop low-cost educational methods and materials enabling educators to train or retrain themselves on their own;
- they take steps to promote exchanges of information among national educational research bodies, the broad dissemination of research findings, and evaluation in the educational system;
- they undertake systematic analysis of educational experience and materials from external sources in order to determine their educational relevance and to bring them into line with local socio-economic, ecological and cultural conditions.

Training of personnel — Both pre-service and in-service training of teachers, planners, administrators and other key education personnel in environmental studies and concerns were stressed by Conference participants. It was recommended that the staff of teacher education institutions be assisted in this regard; that the personnel educated receive environmental training related to the urban or rural area in which they are working or will work; and that such training be undertaken in close cooperation with professional organizations of teachers at both the national and international levels.

Stress was also laid on the importance of pre- and in-service environmental training of professionals, such as economists, business administrators, architects, planners, engineers, technicians and others whose activities, while not specifically in the field of environmental planning and management, nevertheless directly or indirectly have a major impact on the environment. It was recommended that their training include a common core of interdisciplinary environmental studies dealing with both the natural and social environments. In addition, special attention should be given to the development of suitable methodologies and institutional arrangements.

An effective method of such training would involve a problem-solving approach on an integrated, multidisciplinary team basis, since it develops professionals who, while retaining their original expertise, thus acquire an interdisciplinary training and ability to work as members of multidisciplinary teams.

Similar but more intensive training was recommended for those working on specific problems of the environment, such as biologists, ecologists, hydrologists, toxicologists, soil scientists, agronomists, foresters, landscape architects, oceanographers, limnologists, meteorologists and sanitary engineers. An interdisciplinary component was considered indispensable for the training of these specialists. The reorganization of engineering schools and the incorporation of environmental education in the training of engineers was deemed an urgent need.

Special reference was made to environmental education in colleges and universities as centres for research and the training of qualified personnel. This meant development of appropriate teaching aids and textbooks and promotion of close cooperation among university bodies—departments, faculties, etc.—with the specific objective of forming experts in environmental education. Such cooperation might differ according to the structure of university education in each country, but should combine contributions from physics, chemistry, biology, socio-economic studies, ethics, education sciences, etc.

Information programmes and strategies — Stressing the importance of the dissemination of specialized and general environmental knowledge and the development of public awareness of environmental issues, the Conference recommended that Member States:

- implement and develop EE programmes for all sectors of the population, associating in the process, where appropriate, nongovernmental bodies involved in environmental matters;
- establish or encourage the establishment of EE programmes in the formal and nonformal education sectors with the cooperation, where possible, of existing bodies and organizations, both public and private; develop the exchange of relevant materials and information between public bodies and private organizations concerned with environmental in either or both education sectors;
- support nonformal EE activities conducted by institutions and associations, including youth organizations;
- envisage public information campaigns on nationally and regionally relevant environmental problems, such

as fresh-water resources, to promote the general education of the public, such campaigns to be conducted over the next few years by the various Member States acting so far as possible in a concerted fashion;
- include in their EE strategies the preparation of programmes which provide information on present or planned actions with major potential impact on the environment, such programmes stressing the importance of participation by the general public and nongovernmental organizations in the relevant decision-making process, and presenting different possible solutions to the problems in question, thus aiming at developing a responsible attitude on the part of participants;
- encourage and develop the organization of museums and exhibitions in order to increase public awareness of environmental issues and of environmental education itself.

Mass media — In recognition of the particular importance of the mass media in environmental education, inside as well as outside the formal school system, the Conference recommended that Member States:
- encourage the dissemination of knowledge about the protection and improvement of the environment by press, radio and television;
- organize training courses for journalists, newspaper editors, radio and television producers and other relevant mass media personnel, which will enable them to deal properly with environmental issues and education and to exchange among countries programmes and films dealing with environmental concerns;
- ascertain that EE programmes provide for suitable measures to ensure their reaching broad sectors of the urban and rural population not included in formal education programmes by, among other means, the mass media and with the participation of social institutions and organizations.

It was also recommended that Unesco, in cooperation with UNEP, encourage national, regional and international organizations to establish a network for the exchange of information on mass media materials for environmental education for each region.

Regional and international cooperation for the development of environmental education

Delegates considered that, if one of the aims of environmental education was to inculcate the spirit of responsibility and solidarity between nations, an awareness of economic, political and ecological interdependence, then overall cooperation at the regional and international level was certainly essential. They added that there was an equally essential need for subregional cooperation almost as everyday practice, since ecological and geographical proximity, linguistic and cultural affinities, similarities of socio-economic situations and community of views and interests provided a practical and effective basis for joint action. The same delegates emphasized the need to go further, since subregional cooperation activities could only be disseminated by means of wider regional cooperation. Similarly, both the developing and the industrialized countries would benefit from increased international cooperation in environmental education.

All the delegates who spoke referred to information, training, research and experimentation on content, methods and teaching materials as among other fields where regional and international cooperation could and should make an effective contribution to the development of environmental education. As regards the main modalities for action, those which seemed to lend themselves most easily to cooperative action and which related to the various steps taken by governmental and nongovernmental organizations were: exchanges of all kinds, at all levels, taking various forms, such as meetings, exhibitions, festivals, etc.; studies and surveys on innovations and activities for the general promotion of environmental education; projects, in particular pilot projects, intended for national groups or institutions working in both the formal and nonformal fields and aiming to test and develop environmental education innovations.

Delegates considered the question of means and instruments for the execution, in accordance with the main modalities indicated above, of regional and international cooperation activities. Delegates considered that effective coordination should be exercised at the international level to encourage, support and organize efforts and initiatives in the fields of exchanges of information, training activities for young and adult personnel or the preparation and testing of environmental education materials. It was considered that Unesco, by virtue of its competence, structures and experience, was suited for fulfilling this coordinating role and for giving a lead in international cooperation in environmental education. The role of coordinating international cooperation in environmental education which the Tbilisi Conference has entrusted to Unesco requires that the Organization pursue and develop its own cooperation with the other agencies and programmes of the United Nations system, more especially the United Nations Environment Programme, whose functions in international cooperation in relation to the environment mark it out for primacy in this respect. As regards the question of structures, the great majority of delegates were, however, firmly opposed to the creation of new bodies, the need for and usefulness of which seemed doubtful in their view, for the implementation of international cooperation.

The importance of pilot projects to try out innovations and teaching materials was strongly emphasized, as was the impact of such projects on the environment and on the illiterate masses of certain countries. In regard to international projects implemented at national level, those conducted under the MAB programme were singled out for the attention of the Conference by several speakers as examples to be followed.

Specifically, the Conference recommended:

1. **To Member States:** to take all necessary action to implement in the broadest possible way and in accordance with the needs and possibilities of each nation concerned, the results of this Conference on environmental education, and in this respect to draw up action-oriented plans and timetables for actions:
- to foster bilateral, regional and international cooperation within all branches of environmental education, based upon scientific research and a broad exchange of information and experience, cooperation on programmes, etc.;
- to facilitate comprehensive approaches to the solution of environmental problems within the jurisdiction of each country concerned by safeguarding the necessary prerequisites for environmental education — comprehensive or coordinated legislation, financial, organizational and other measures;
- to inform other Member States as well as the Secretariat of Unesco about the time schedules, results, methods, etc., concerning environmental education

and to forward to the Secretariat of Unesco all materials in this respect which they would consider usable elsewhere;

- to extend the necessary advice in environmental education to other Member States or their organizations.

2. **To Unesco:**

- to establish a regular information bulletin (or service) aimed mainly at informing Member States about all actions on environmental education prepared for a given period by the Secretariat of Unesco, by Member States or by organizations; and about new publications, research work, methods, experiences, etc., in close cooperation with the IRS system and other UN agencies;
- to foster international symposia, seminars, filmshows, etc., aimed at environmental education;
- to request the Executive Director of UNEP to support Unesco's actions in implementation of recommendations adopted by the Tbilisi Conference;
- to promote standing implementation of the Plan of Action, adopted by the United Nations Stockholm Conference on Human Environment, with further emphasis on environmental education.

The Conference further recommended to Unesco:

- that it expand the field of its activities in environmental education and give it a greater role in future plans for the general area of education programmes and actions;
- that with the assistance of UNEP, it consider the possibilities of further development of the International Environmental Education Programme;
- that it expand the functions of its Regional Offices to enable them, in cooperation with Unesco National Commissions, to help: (a) develop or adapt instructional materials related to local environmental problems for use in the formal and nonformal education of primary and secondary school-age students; (b) create regional source books for environmental education which will foster and facilitate development of locally appropriate instructional materials; (c) encourage activities of youth groups and nongovernmental organizations geared to improving and understanding of local ecosystems and environmental problems, taking into account urban as well as natural environments; (d) identify new and promising approaches to environmental education; conduct and evaluate pilot projects; systematically disseminate to other potential users those aspects of projects which are applicable; (e) provide educational opportunities to teachers and school administrators; (f) supply environmental education materials for use by the mass media; (g) conduct an expanded programme of pilot project research, documentation and evaluation in environmental education, and give wide dissemination of the results of these projects and similar activities through Unesco's environmental education publication *(Connect)*;
- that it utilize existing institutions to receive, catalogue and disseminate materials useful in environmental education;
- that, in cooperation with UNEP, it develop model training courses, seminars, etc., on environmental and development issues for use by the UN organizations and others in the training of officials of the developing countries and those concerned with assistance to them. Existing international training institutes and programmes should expand their training curriculum to include subjects on basic ecological relationships, impact assessment and establishment of effective institutional and regulator mechanisms;
- that it place more emphasis on the sharing of environmental experiences and remedial measures between developing countries;
- that it issue, on a regular basis, worldwide directories of environmental education organizations and personnel from existing information collected and compiled by Unesco;
- that it cooperate closely with nongovernmental organizations and support their activities in environmental education;
- that, in cooperation with UNEP, it proclaim a specific environmental topic to be treated on a worldwide scale at appropriate intervals in consultation with relevant regional and international organizations.

By Way of Conclusion

In his closing speech, Unesco's Director-General on the last day of the Tbilisi Intergovernmental Conference, 26 October 1977, suggested that the goals, objectives and guiding principles established for environmental education constituted "both a milestone and a starting point."

In this connection, a key passage from Mr. M'Bow's closing address might be quoted: "As an essential component of a global, lifelong, problem-solving education that prepares people for active participation, environmental education follows the guiding line which, in most countries, governs the movement of educational systems towards greater relevance, greater realism and better two-way contact between the physical and social environment in order to make humanity more closely involved with its surroundings." Thus, "environmental education perhaps represents an ideal opportunity to restore to education an ethical function it has sometimes lost and that educators in many countries... would like to see it recover, drawing inspiration from the needs and concerns of the contemporary world."

In summary, the Tbilisi Conference's recommendations "form the equivalent of an *action plan*" for the development of environmental education at the national, regional and international levels. As for Unesco itself, the Director-General pledged to intensify the Organization's work in this programme area "in the light of the Conference's recommendations" and "to move into a more operational phase." This meant, *inter alia*, "making aid from Unesco available to Member States which would like to launch pilot projects"; considering a 'bank' of experts on environmental education; augmenting "work in the exchange of experience, in training and in encouraging the production of teaching materials"; and strengthening the Secretariat and Unesco's infrastructure in general for the increased promotion of environmental education, particularly "the appointment of specialists in environmental education to the various Regional Offices and the establishment of training facilities or machinery for cooperation between Member States."

The urgent need for "action to protect the environment and perhaps even more for education to this end," was the essential appeal of the Tbilisi Declaration, an appeal, the Director-General had no doubt, "will be heeded."

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A Report on Pilot Projects in Environmental Education

A principal operational area of the Unesco-UNEP International Programme for Environmental Education, whose first, three-year phase culminated in the Intergovernmental Conference held in Tbilisi, USSR, 14-26 October 1977, has been financial and technical assistance to pilot projects in every region of the world. These projects, limited in scale and generally still underway, have concerned research, experimentation and field testing of innovations in environmental education (EE).

The projects involve various aspects of both in-school and out-of-school EE activities. They view the environment in its totality – social, natural and built; they employ an interdisciplinary approach, emphasizing active participation in the prevention and solution of environmental problems.

The pilot projects have been conceived primarily as *innovative activities* aimed at meeting the most important environmental education needs and priorities of the country or region involved. Though limited in scale and scope, they imply a high potential of *transferability*, particularly to other countries or regions with similar concerns and characteristics.

The *results* obtained from the pilot projects indicate the possibilities and constraints of particular EE efforts and point the way to their improvement, thus furthering the development of environmental education generally, that is, developing people's knowledge, motivation and capacity to preserve and enhance the environment as well as to anticipate or solve, individually or collectively, its problems.

These pilot projects are briefly described below.

Africa

African Pilot Projects in Environmental Education

Ghana.

Development of multimedia materials on environmental science education components, for use by primary school teachers in Sub-Sahara Africa – a project being conducted by the Science Education Programme for Africa (SEPA). A principal *objective* is to develop primary level instructional materials which focus on environmental problems. A complementary objective is to encourage the incorporation of these materials in national curriculum development activities of both English- and French-speaking African countries.

The project's expected *results* are the development of both English and French modules of instructional materials, including multimedia elements (especially printed and audiovisual), and the establishment of norms for their educational utilization and regional transferability.

Among the principal *activities* has been a seminar attended by eleven experts, which was held in Free-

town, Sierra Leone, 6-16 November 1977. Here the experts, who came from various countries of Africa, identified integrating themes as well as methodological and instructional principles for the development of multimedia educational modules. Following the guidelines laid down by the Freetown seminar, SEPA has been developing two modules, one concerned with water use problems and the other with the production and use of food. Teacher guides, filmstrips and children's readers for both modules as well as reading materials for students have been published. It is planned to test and evaluate the modules during the year under classroom conditions. The project will come to an end in December 1978.

Kenya.

The Kiambu High School project for the development of an integrated environmental science education programme for Kenya secondary schools – a project being carried out by the Ministry of Education of Kenya in an experimental secondary school as the first phase for a larger national project utilizing the environment as the integrating theme for the curriculum of secondary schools. The project's *objective* is to link subject areas related to the environment, especially science and social studies, so that both scientific and social knowledge, important for the comprehension and resolution of environmental problems, are fully developed. In this perspective, the project involves students in actual problem-solving activities as well as in the life of the entire community.

The specific *results* expected are: the organization of courses for the environmental retraining of people involved in the project; the development and evaluation of prototype teaching/learning materials on environmental problems; and the development within the school of a well-equipped unit for the production of such materials. Among the main *activities* was the organization of a seminar of experts by the Kenya Institute of Education in Nairobi, 14-15 October 1976, which defined guidelines for the development of teaching/learning materials and the interdisciplinary training of teachers.

Senegal.

Environmental education pilot project for the adult populations of Africa – a project, commenced in September 1977, being developed by the Ministry of Education of Senegal and Unesco's Regional Office of Education for Africa in cooperation with the Environmental Training Programme of Dakar (ENDA). The principal *objective* of the project is to define the concrete means and methods of environmental education destined for African adult populations, particularly those of the Sahel region. The *results* expected are the training of specialists who will be responsible for the development and testing of these means and methods in Senegal as well as their effective application and use.

Among the project's *activities* is the organization of a workshop, scheduled in the first half of this year, which will bring together experts from various countries of the Sahel region and will have as its objective the development of teaching modules structured around environmental problems. When the project comes to an end in December 1978, Unesco's Regional Office of Education for Africa will disseminate the results among the nations concerned aided by the information network of the Unesco-UNEP International EE Programme.

Arab States

The Arab States' Pilot Projects in Environmental Education

Jordan.

Pilot project on water pollution and purification in the Ghore area of the Jordan Valley – this project, shortly to begin, will be conducted by the Ministry of Education of the Hashemite Kingdom of Jordan in cooperation with the Water Authority and other ministries through an advisory committee. Among *objectives* of the project are the participation of school and community in the solution of environmental problems affecting the daily life and the direction and mobilization of their members and organizations for that purpose.

The expected *results* include: (1) preparation of an outline for a publication dealing with the theme of water pollution and community water use; (2) development of an educational module; (3) convening of a three-day workshop for the training of teachers who will test the module; (4) experimentation and evaluation of the module in three preparatory schools; (5) publication of the final evaluation report, which will include problems met, results obtained and recommendations for expansion of the project to include out-of-school activities in Jordan; and (6) publication of a bulletin on water pollution and purification for the general public.

Egypt.

Environmental education in youth clubs and associations – a project under preparation which will be developed by the Egyptian National Commission for Unesco. Its *objective* is to design a strategy to increase youth awareness of the environment and ensure its effective contribution to a country-wide programme for environmental education and preservation. Ex-

pected *results* include: development of educational syllabi for youth dealing with local environmental problems; development of educational modules for testing in various youth organizations; and preparation of a final evaluation report on the project in English, which will include recommendations for expansion of the project to all youth organizations of Egypt.

Among the project's principal *activities* are: (1) organization of a seminar in each of five different regions of Egypt with the object of encouraging youth organizations newly concerned about the environment and its problems; (2) identification of local environmental problems and elaboration of appropriate syllabi; (3) organization of a meeting of curriculum developers, teachers, environmental specialists and leaders of nonformal educational activities with the purpose of developing educational modules; and (4) training of personnel for the implementation and experimentation of these modules in various youth organizations.

Asia and Oceania

Asian Pilot Projects in Environmental Education

Afghanistan.

Design, development and implementation of instructional materials in environmental education for primary schools – a pilot project under the direction of the Ministry of Education of Afghanistan, specifically its Science Center in Kabul. The *objective* is to infuse environmental education elements into the science education programme of the seventh and eighth grades of primary education. Individuals involved are Science Center personnel as well as researchers and curriculum developers from other departments, science education supervisors, schoolteachers, 7th and 8th grade students and Unesco experts working at the Science Center.

Expected *results* include development of teaching/learning modules, training of personnel in the use of the modules, implementation and testing of the modules in selected schools, and evaluation of the project, including recommendations for its expansion.

The operational plan indicates the following *activities*: (1) development of three teaching/learning modules centered around such themes as sanitation, safe drinking water, conservation of soil and water, and prevention of dust problems; (2) development of a course and corresponding instructional materials for conducting in-service training of about forty science supervisors and teachers involved in the project; (3) implementation of the teaching/learning modules in a selected number of Afghan schools in different ecological regions; (4) evaluation of the results obtained by the project; and (5) publication in English of a final evaluation report proposing recommendations for improvement and expansion to all grade levels of the Afghan school system.

The project is expected to take about one year and a half for completion.

Indonesia.

An environmental education experiment using an integrative approach in Jakarta primary schools – a project being developed by the Man and the Biosphere (MAB) Committee of Indonesia in selected primary schools with the cooperation of the Education and Cultural Research and Development Office, the Jakarta Municipal Government and the Institute of Teacher Training and Education. The *objective* is to develop a model for environmental education through integrated education in grades four, five and six of primary schools with the aim of expanding the project throughout Indonesia at a later date.

The expected *results* consist of the preparation of environmental education modules for primary school students and for primary school teacher training. The plan of operation anticipates these *activities*:

1. educational research oriented toward: (a) definition of those learning situations in primary schools which have the greatest potential for the inclusion of environmental education; (b) study of existing curricula to determine in which areas environmental themes can be introduced in an integrated manner; (c) study of teaching approaches, methods and practices most effective in bringing about changes appropriate to the goals of environmental education in the behaviour of pupils; and (d) study of teacher training methods for environmental education;
2. development of two educational modules composed of (a) an experimental EE programme for primary schools; and (b) an experimental module for the environmental training of primary school teachers through the convening of a series of workshops;
3. implementation on an experimental basis of the two modules in several primary schools of Jakarta;
4. evaluation of the results obtained in the experimental phase of the project, utilizing the training workshops convened throughout the project's duration;
5. publication in English of a final evaluation report, indicating results obtained and proposing recommendations for its improvement and expansion to other Indonesian primary schools.

The project is expected to take three years.

Mongolia.

Nonformal environmental education for the general public and for specific social groups – a project being carried out by the State Committee of the Board of Ministers for Science and Technology of the Mongolian People's Republic in various cities and regions of

the country. The *objective* is to develop EE programmes intended for the general public and specific social groups, such as industrial and agricultural workers, and to develop instructional aids for these programmes, including mass media units for radio, television and eco-museums.

The *results* expected include the development of multimedia education modules utilizing slides and films concerning the particular environments of industrial and agricultural workers, the publication of a reference book on nature conservation and environmental protection and the establishment of eco-museums.

In pursuit of these results, the operational plan outlines these specific *activities*: (1) production of two modules concerning the specific environments of workers in the industrial and rural sectors; (2) development of audiovisual teaching materials adapted to the above-mentioned educational programmes, in particular, slides and a short film concerning the principal problems of the environment; (3) publication of a reference book on the conservation of nature and protection of the environment in the Mongolian People's Republic; (4) setting up of seven eco-museums in seven departments of the country; (5) preparation and publication of a final evaluation report.

A duration of twelve months is envisaged for the project.

Latin America and the Caribbean

Latin American Pilot Projects in Environmental Education

Colombia.

Educational programme for the conservation of the ecological balance and renewable natural resources of Colombia – a pilot project, commenced in 1977, being conducted by the Institute for the Development of Renewable Natural Resources (INDERENA) of the Colombian Ministry of Agriculture in cooperation with the Ministry of Education.

The project's *objective* is to develop an educational programme for those groups of individuals (teachers, foresters, hydraulic and agricultural engineers, government officials, et al.) whose professional activities have an impact on environmental quality. The intended training is designed to help them perform a major role in the promotion and development of solutions to Colombia's environmental problems.

The *activities* and expected *results* of the pilot project include the development of a multimedia educational module composed of fifteen environmental education units especially adapted to the coffee-producing region of Colombia and the organization of a training course for applying this module. The course has been conducted on an experimental basis in a densely populated eco-zone.

The final evaluation report is under preparation and is planned shortly to be published. On the basis of evaluated results, Colombian authorities involved in the project will prepare a plan for the continuation of its activities on a regional and national level.

Guatemala.

Pilot project to organize the first four years of primary education around environmental problems – a project begun in the latter half of 1977 and being carried out under the Ministry of Education of Guatemala. The *objective* is to adapt the primary school curriculum to the natural and social environment of each community, by modifying it to focus on the specific environmental problems of severa rural regions selected for this pilot purpose.

The expected *results* are: (1) development of a new curriculum for the first four years of primary level education; (2) organization of working groups to guide teachers and instructors applying the new curriculum; and (3) preparation and dissemination of educational materials to support the curriculum. The new study programme will be tested in eight rural departments of the Andean mountain plateau, where almost a third of the population between seven and eleven years of age is concentrated.

Among the principal *activities* for this year will be the organization of four workshops for the purpose of training some 240 teachers and school administrators of the pilot region in the content and approaches of environmental education. These individuals will subsequently play an important role in the gradual extension of the project nationally, after the development, testing and improvement of the materials produced.

The first, pilot phase of the project will come to a close at the end of 1978.

Panama.

Environmental education as a component of the work study programmes of general basic education centers – a pilot project being conducted by the Ministry of Education of Panama. The *objective* is to introduce natural and social environmental themes into the primary level of education, especially problems concerning food, hygiene and agricultural production. The project also envisages promotion of associated community-based *activities* so as to encourage the development of environmental awareness among the population.

The project is being carried out, on a pilot basis, within an educational nucleus in the district of Calobre. The specific *results* expected include the elaboration of curricular units and the development of appropriate instructional materials aimed at primary school students of the educational nucleus, also the development of in-service training programmes for teaching personnel involved in the project.

The required programmes and materials having been developed, the project at present is being tested in the Calobre educational nucleus. The final evaluation of the results obtained, eventually to be published, with the objective of extending the project to other educational nuclei of Panama, is planned for the beginning of 1979.

Peru.

Experimental environmental education project for adaptation in the third year programme of Peruvian secondary education – a project which commenced in the latter half of 1976 and is being currently conducted by the Ministry of Education of Peru on a pilot basis in selected educational centers of the Lima area. The *objective* of the project is to utilize the problems of housing as an integrating theme for the introduction of environmental concerns within the curriculum of the third year of secondary education and to link this experiment with the local community.

The *activities* and *results* expected include: (1) the training of necessary personnel for the development of the project; (2) elaboration of an experimental curriculum for integrated environmental education ; (3) application of this curriculum on an experimental basis in fourteen secondary school educational centers; and (4) dissemination of information to the out-of-school community of the pilot area in order to encourage its participation in actions aimed at the protection and improvement of the environment.

Most of the project activities having been accomplished, namely, the training of personnel and the development and testing of an experimental curriculum, the project is presently being evaluated with the objective of extending it throughout Peru. It il planned to publish a report.

Venezuela.

Environmental education for secondary schools – a project being developed by the Experimental Institute of Teacher Training of the Ministry of Education of Venezuela. The *objective* is to introduce natural and social environmental themes into the curriculum of the third year of secondary schools and simultaneously undertake associated community-based activities to promote the development of environmental awareness on the part of the public.

The project is being conducted, on a pilot basis, in an educational nucleus of Venezuela. The *activities* and expected *results* include: (1) elaboration of curricular units and the development of associated instructional materials intended for the third year of secondary school students; and (2) development of in-service training programmes for teaching personnel involved in the project.

Two teaching/learning units have been prepared which deal specifically with the natural environment; they are titled: "Nature and Natural Resources" and "The Preservation and Conservation of Resources and the Environment". A third unit which deals with social aspects of the environment, centering on housing problems, has also been developed. Pilot testing of the three units was undertaken in 1977.

The results obtained are currently being evaluated by the Experimental Institute of Teacher Training. A final report will be published at the end of this year covering the problems encountered and including recommendations for the project's improvement and diffusion to other educational sectors.

Europe
North America

Europe-North America: Pilot Projects in Environmental Education

Ukrainian SSR.

Methodological interdisciplinary research concerning the integration of school and society in the sphere of environmental education – a pilot project conceived and conducted primarily by professors and teachers of the Natural Sciences and Geography Faculty of the Kiev Pedagogical Institute in cooperation with the Central Young Naturalists Station and the Pedagogical Research Institute of the Ukrainian Soviet Socialist Republic. It was further elaborated by teachers and researchers of different disciplines involved in the development of secondary school curricula.

The *objectives* and expected *results* of the project are based on a multi- and interdisciplinary approach aimed: (1) at providing secondary school pupils with the knowledge and sense of responsibility required for the perception and solution of environmental problems; and (2) at promoting their active participation in the prevention as well as the solution of such problems, in the improvement of the environment and the ecologically sound development and use of natural resources. A primary objective is to demonstrate the need for continuing environmental education throughout the year, involving both curricular and extracurricular or holiday activities, inculcating a sense of the interdependence of school and community in the preservation and improvement of the environment.

The programme of *activities* envisages: (1) obtaining data on the perception, attitude and behaviour of 12-16 year-old pupils in regard to the natural and social environments and their interrelationships; (2) identifying environmental problems for pupils to cope with in their study of the proper use and protection of the environment; (3) testing the pupils involved as to the progress of their environmental education in accordance with the objectives of the project and in comparison with pupils who are not involved in the pilot experiment; (4) evaluating the experimental educational methods used for the expansion of pupils' knowledge and improve-

ment of their environmental behaviour; and (5) selecting those methods, approaches and materials which would best be used throughout the Soviet Union and beyond.

Due to the project's aim of permitting comparisons, several schools and communities have been selected for the pilot experiment on the basis of their different physical, ecological, social and economic characteristics.

The Ukrainian SSR project is to terminate by the end of this year, after which a final research report will be published describing the problems encountered, the results achieved and the steps taken to improve and disseminate the EE methods and materials developed.

The four pilot projects which follow have all been completed.

Canada-U.S.A.

A two-nation regional environmental education programme based on the shared marine environment of the Pacific Northwest – a project that was developed and conducted by a steering committee consisting of persons from both Canada and the United States and was overseen by coordinators from the University of Victoria and the University of British Columbia (Canada) and Huxley College of Environmental Studies (Washington State, U.S.A.).

The *aim* of the project submitted by the University of Victoria was to involve people working in the field of environmental planning and management in environmental education activities, i.e., government officials, research institutes, industry and land developers. The geographical area concerned was the shoreline and marine region shared by British Columbia and Washington State, an area of exceptional natural beauty which has witnessed numerous examples of public participation in environmental planning and action projects, of school, college and university EE programmes, and of cooperation among governmental agencies and research institutes in both nations.

Within this Pacific Northwest area the project aimed at facilitating cooperation and coordination among the widely varying types of environmental education activities which already exist – in public schools, colleges, universities, environmental organizations, industry, governmental agencies and the mass media – and, further, at including *activities* such as EE workshops, week-end retreats, in-service teacher training, summer camp projects, dissemination of resource materials, environmental action projects and EE use of mass media for public awareness and participation. The general content of the activities consisted of a range of environmental issues emerging from the shared marine environment of both nations. Study of the "salmon habitat" as a measure of the quality of life in the Pacific Northwest was a specific and important content; focus was placed on educational strategies for relating this theme to those aspects of the core curriculum stressing inter- and multidisciplinary approaches.

The more important *results* of the Pacific Northwest project are: (1) the convening of a teachers' workshop for the development of an interdisciplinary curriculum and the preparation of a manual for stream studies; (2) the development of instructional materials; (3) the establishment of a regional information/data bank related to the salmon habitat theme; and (4) the development of a variety of cooperative programmes linking various interest groups within the formal and nonformal education sectors.

U.S.A. – Canada.

An international environmental resources network (Internet) – a project that has been developed by Threshold, Inc., Washington, D.C., U.S.A. The *objectives* were to develop a two-nation (U.S.-Canada) network of secondary school science teachers to promote environmental awareness through the dissemination of educationally significant scientific information on environmental events and conditions; and to act as a large-scale means by which scientists can collect inexpensively observational data and samples by using students and teachers in environmental surveillance projects.

The Internet network *results* have included: 68 teachers reaching over 5,000 students in four Canadian provinces and twenty U.S. states; several meetings of scientists and educators convened to discuss the usefulness of the Internet project in science and education; and two editions of the *Internet Teacher Guide*, including source materials, which have been printed and distributed. Such materials as the latter provided a real-life complement to the traditional textbook approach to teaching, enlivening the learning of science in much the same way as the inclusion of current political and social events found in newspapers brings to life a study of sociology.

In an Internet educational package of environmental information, the implication of events and situations is considered: (1) in terms of their economic and social aspects, including human population size and distribution, land use practises, resource management, public and governmental responses to disaster and pollution incident warnings and to the impact of the events themselves; and (2) in terms of the principle of dynamics in natural ecosystems and social organizations, as well as the physical and thermodynamical laws in meteorology, hydrology and geology.

Furthermore, by involving students in field projects of actual scientific value and informational usefulness, the Internet projet engaged them in a more rewarding educational experience than in the usual academic exercise. Internet's concept was demonstrated as valid, namely, that the world's student population is a gigantic manpower resource, already organized in a classroom context under supervision, which can be mobilized in labour-intensive scientific field research projects. Accordingly, the Internet project offered the scientific community a low-cost means of collecting data and samples from broad geographical areas by utilizing a network of student amateurs in field projects of proven value to scientists.

A critical feature of the Internet project and its data reports on environmental events and situations was the developmental or evolutionary approach – its ability to change and adapt to expressed teacher/student needs and interests. The success of the project suggests possible transferability or extension of the network to other countries and regions.

France.

Interdisciplinary methodological research concerning the acquisition of knowledge, values, attitudes and skills related to the environment by secondary school students – a project that has been conceived and developed by the National Institute for Pedagogic Research of the French Ministry of Education.

The *objectives* of the project were: (1) identification of the most prevalent values, attitudes and knowledge concerning the environment among secondary school

pupils from a selected variety of socio-economic situations of rural and urban France; (2) identification of processes to reinforce or modify such values, attitudes and knowledge; (3) analysis of the most favourable educational approaches for the development of environmental education; and (4) a final report analyzing the degree of efficiency of the different educational methods utilized to carry out the above objectives.

Activities involved research work with students of twelve schools in: (1) an urban environment (Paris, metropolitan suburbs, medium-sized and new towns); and (2) a rural environment. The work was based on interdisciplinarity and the combination of theoreticians and practitioners. Personnel other than students involved were teacher-researchers of the various disciplines, researchers in education, psychology and sociology, ecologists, town planners, architects, biologists, physicists and administrators.

Results of the first phase include: (1) identification and definition of the objectives of environmental education according to their priorities and the educational level of the student; (2) analysis of learning aptitudes, concepts and modes and the obstacles met (affective, epistemological, sociocultural) in learning about the environment and its problems; and (3) evaluation of effective educational strategies in terms of teaching/learning situations, conditions and the role of the teacher/trainer.

The most interesting results were obtained through a systemic and interdisciplinary teaching/learning approach, in which:

1. phases of research done in small groups on the basis of stimulating and provocative discussions alternate with phases in which the different groups work together in solving an environmental problem or conducting an environmental project;
2. the teacher participates in the learners' activities while taking into account their thinking patterns, motivations and frames of reference as well as the long-term pedagogical objectives;
3. an "outside the classroom" context obtains – work in a real life milieu, environmental projects, access to the media and documentation, meetings with specialists and decision-makers.

Stress was placed on the modalities for achieving these results educationally in the face of representative obstacles encountered by both the teacher and the learner, and on the development of materials and techniques for the training and use of teachers and students.

United Kingdom.

In-service training of European educators in urban environmental studies and research – a project that has been conceived and developed by the Town and Country Planning Association of the United Kingdom. The *objectives* were: (1) to synthesize the British urban studies experience; (2) to relate it to a broad overview of environmental education as it is developing in Britain and on the Continent; and (3) to disseminate the information gathered by means of a report and a series of in-service courses.

The courses involved, which were held in London, had a two-fold objective: to introduce European educators to the main themes and sources of urban studies and to examine their application in certain innovative educational techniques and facilities. The lectures covered major characteristics of the urban scene and considered how this information may be interpreted for secondary level school study. Lecturers were chosen from amongst experts of national reputation in the fields of teaching and town planning.

In addition to the lectures and different discussions, seminars and audiovisual presentations, there were opportunities to visit characteristic urban environments and participate in a group study project in a selected area. In the course of lectures, wide interpretation of public education was proposed, both in- and out-of-school, and many interesting activities were presented and discussed: the project of so-called "street education", the "Front Door Project", in which the involvement of various institutions with educational influence and the use of other methods are foreseen; and the project for wide public involvement through activities of urban studies centers and the latter's use of various educational methods for different groups of environmentalists.

During the course, participants visited urban studies centers and were made acquainted with their activities and also the architecture of modern London. They examined the methods of work utilized for school youth and general public and the documentation on such activities. Apart from lectures and visits, course working methods included seminars and project activities. Two seminars were organized: "Ecology of the City Center" and "Conserving the Urban Fabric". Project work concerned a particular London area, where chosen problems were examined "in the streets".

The most important methods proposed for environmental education were: problem teaching at school during classes in various subjects (geography, biology, history, arts, religion); providing information and development of attitudes by use of mass media; organization of meetings and discussions by clubs and urban studies centers; didactic games and street studies. The environmental education methods recommended were deemed very interesting, especially "street studies" for students aged nine to nineteen who undertake particular on-the-spot studies with the requirement that they present an analysis and evaluation of the environment as well as prepare documentation on their work.

Methods for influencing public opinion were also presented. Information about people's living environment, discussions and the creation of a free atmosphere were among methods recommended. The commitment of planners and architects to environmental education, together with their cooperation with school and community in the development of social awareness, was considered new and important.

The environmental education projects presented during the courses cannot, in the opinion of the Town and Country Planning Association, be transferred *directly* to education systems in other countries, but they can be *adapted* to other educational requirements and goals. Moreover it seemed possible to create in various countries similar centers for wide public education and development of public awareness of changes in, and proper management of, the environment. It also seemed possible to adapt the proposed methods and instructional techniques, especially the new methods of environmental studies based on architects' work, presented at the courses held in London.

MAB Pilot Projects and Training Activities

Responsible within Unesco for postgraduate training in applied ecology, the Man and the Biosphere (MAB) Programme stresses on-the-spot training at MAB pilot projects as a major type of training activity. A network of pilot projects is being developed with projects already underway in most of the geographic and bioclimatic zones. Examples are found in humid and subhumid tropical areas (Philippines, Thailand, Papua New Guinea, Malaysia, Indonesia, Australia, Ivory Coast, Nigeria, Zaire, Mexico, Peru, Venezuela) and in urban areas (Hong Kong, Papua New Guinea, Mexico, Venezuela, Federal Republic of Germany, Italy, Poland).

The objectives of these pilot projects are to: (1) provide ecological bases for integrated use of natural resources and management of ecosystems ; (2) contribute to policy making ; (3) predict ecological and sociological effets of different development schemes; (4) promote an interdisciplinary approach to environmental management; (5) develop methodological bases for problem oriented research; (6) assist in regional summarization and exchange of information ; (7) demonstrate results of ecologically oriented management ; and (8) develop local capacities for environmental research and management. Actions to achieve these objectives are based on the complementarity of problems and ecosystem types treated in different pilot projects and on communication and coordination of efforts.

Advantage is being taken within MAB of ongoing pilot projects for the *in situ* training of research workers and for the organization of more formal national and regional training courses. This type of training enables specialists to observe, discuss and evaluate on the spot the use of research techniques and methodologies which might be useful in the participants' own work, and to establish links for future cooperation and exchange of personnel within the framework of MAB.

An example of a MAB on-the-spot training activity took place recently in Egypt and Tunisia. From 28 March to 7 April 1978, specialists from northern African countries participated in a study tour of the sites of two complementary MAB pilot projects: the project on Systems Analysis of Mediterranean Desert Ecosystems in Northern Egypt (SAMDENE) and the project on research and development of rangeland in south central Tunisia.

The SAMDENE project emphasizes fundamental research using a systems approach in a very arid area, while the Tunisian project stresses management aspects in research conducted in a less arid area. Both projects enjoy the support of a variety of international organizations and scientific institutions and the cooperation of other countries from both within and outside the region.

UNEP Communiqué

Consultations on UNEP's Programme Activity Center for Environmental Education and Training (PACEET) in Africa, 26-27 January 1978 : A number of UN agencies, regional organizations and institutions were represented at a meeting in Nairobi, Kenya, convened by UNEP, to discuss the goals, objectives, strategies and action plan of PACEET. This center was established on an experimental basis by the Executive Director of UNEP, on the authority of the Governing Council, to promote the rapid development of environmental education and training in the region in cooperation with Unesco, other agencies and organizations. The meeting examined the UNEP catalytic initiative and its draft Plan of Action, which had been tabled as the basis for discussions and future actions. Participants at the meeting were urged to collaborate in the development of concrete and realistic programme activities. PACEET will make full use of existing regional mechanisms, including the Unesco Regional Office for Education (Dakar) and for Science and Technology (Nairobi).

EE Trends – A Book

The fourteen working documents or trend papers prepared by authors from every region of the world for the Belgrade Workshop on Environmental Education, October 1975, have since been rewritten and are now available as a book in English, French and Spanish, titled *Trends in Environmental Education*. All levels and forms of general environmental education are considered, as well as philosophy, methodologies, materials, legislation, etc. The book can be purchased from Unesco national distributors in many cities of the world. A list is available from Unesco Press, 7, place de Fontenoy, 75700 Paris, France. The sales price in France is 36 French francs. A limited number of copies in Arabic are available on request to *Connect*. A Russian edition is in preparation; its availability will be announced in a future issue.

Help

Unesco is preparing a descriptive directory of *environmental education periodicals* (revues, newsletters, etc.). Please send specimen copies with details concerning periodicity, price, readership, contents, and so on. The directory is intended for publication.

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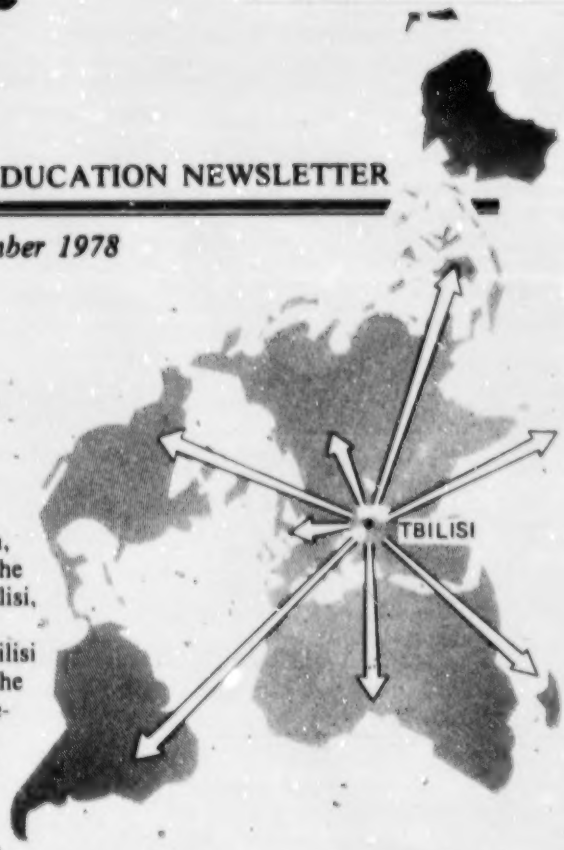
Follow-Up of the Tbilisi Conference



The follow-up, or implementation, of the world's first Intergovernmental Conference on Environmental Education, convened by Unesco and organized in cooperation with the United Nations Environment Programme (UNEP) in Tbilisi, Georgia (URSS), 14-26 October 1977, is now under way.

The Declaration and forty-one recommendations of the Tbilisi Conference constitute the framework and guidelines for the development of environmental education at the national, regional and international levels. They define the role, objectives and characteristics of environmental education; policies and strategies at the national level for its effective realization; and the broad lines for achieving regional and international cooperation in the interests of its widest development (see *Connect*, Vol. III, No. 1, January 1978).

Reports on the actions taken at the international, regional and national levels since the Tbilisi Conference, or to be taken, will be published as they are received. The first reports may be found below. Further reports are solicited from every region of the world in order to fill in the picture of post-Tbilisi environmental education efforts, plans and activities.

At the International Level

UNESCO

Much of Unesco's general activities in the field of formal and nonformal environmental education are conducted through the International Programme in Environmental Education, initiated in cooperation with UNEP in January 1975. The Tbilisi Conference was the culminating point of the first, three-year phase. Other important activities, directly or indirectly related to environmental education, are undertaken in the framework of other Unesco programmes, such as the programme for youth, for integrated science teaching, biology, literacy, adult and rural education, population education and education for international understanding and peace.

An intergovernmental and interdisciplinary research programme on Man and the Biosphere (MAB), launched in 1971, now provides environmental training activities. Significant strides are also being made in the natural sciences sector towards the promotion of environmental training of engineers and other specialists. In the social sciences sector, programmes dealing with the perception of environmental quality, youth activities, human settlements and socio-cultural environment have been initiated, such as an International Human Settlements Managers' Training Programme in cooperation with UNEP. Similar programmes are being developed for architects, town planners, managers and economists. Increasingly emphasis is being placed in Unesco on intersectoral programming and activity around one of its principal objectives: preservation and improvement of the world's natural, social and cultural environment.

As a first step in the follow-up to the Tbilisi Conference, Unesco undertook an analysis of the Conference's recommendations and conclusions so as to translate them into specific programmes and actions. This has meant: (1) inclusion of environmental education (EE) activities to a greatly increased extent in the draft programme and budget for the biennium 1979-80, which will be submitted to the General Conference of Unesco in October 1978; and (2) preparation of a cooperative project with UNEP for the second, operational phase of the International Programme in Environmental Education, which will take it through 1983.

Upon approval of the draft programme and budget by the General Conference in October of this year, details will be presented in a succeeding issue of *Connect* and similarly for activities projected in the second phase of the International EE Programme. In the meantime the broad action areas might be indicated:

- systematic integration of an environmental dimension into national education policies and plans in order to promote efforts to develop environmental education of school populations, general public and various occupational and social groups through a coordinated action; mobilization of all educational resources available in the context of formal education systems and different modalities of nonformal education as well as in mass communication.
- exchange of environmental education information and experiences at the national, regional and international levels, with a view to disseminate them widely among institutions and individuals involved in the planning and implementation of environmental education training and research;
- promotion of interinstitutional and interdisciplinary mechanisms aiding institutions and individuals concerned (educators, environmental specialists, scientists, et al.) to participate in the formulation of policies, plans and projects for the development of environmental education, and similarly helping to coordinate efforts in this field;
- reorientation of curricula and development of educational materials with a view to incorporating or strengthening the environmental dimension in an interdisciplinary, problem-solving approach to the educational process;
- incorporation of environmental education in the pre- and in-service training of educational administrators, planners and educators;
- development of multi-media programmes (including programmes for use in mass media) designed for the environmental education and information of the general public;
- research and experimentation in the orientation, content, methods and materials of environmental education, as well as evaluation of environmental education innovations so as to promote, improve and disseminate their results;
- international and regional cooperation in the field of environmental education among Member States and international governmental and nongovernmental organizations.

Specific Unesco activities for the remainder of 1978:

- provision has been made for financial and technical support to a number of national training activities in the different regions;
- two regional workshops for the training of key personnel in environmental education will be organized;
- preparation of two publications, one based on the working documents and conclusions of the Conference and the other a teacher's manual for environmental education, has been initiated;
- consultants for each of the four regions (Africa, Asia, Latin America and the Arab States) will have been assigned for the promotion and development of environmental education.

UNEP

In order to promote a coordinated approach to environmental education and training within the United Nations system in the light of, and as a follow-up to, the Tbilisi Conference and its recommendations, the United Nations Environment Programme (UNEP) organized a joint programming exercise among a number of the UN agencies and organizations concerned.

The meeting convened by UNEP was held in the Paris headquarters of Unesco from 21 through 23 June 1978. Representatives from the following organizations participated: Economic and Social Commission for Asia and the Pacific, Food and Agriculture Organization, International Labour Organization, International Maritime Consultative Organization, World Health Organization, World Meteorological Organization, United Nations Development Programme, United Nations Fund for Population Activities, Unesco and UNEP.

The basis for discussions was provided by a working paper prepared by Unesco in consultation with UNEP, which was divided into three parts: (1) the Tbilisi framework for the development of environmental education; (2) current environmental education and training activities of UN organizations: and (3) planned, and possibly cooperative, actions to be undertaken by these organizations with a view towards implementing the Tbilisi recommendations.

Environmental education and training were considered in terms of these categories: (1) education of the general public; (2) education of occupational or social groups whose work has an impact on the environment

(e.g., engineers, architects, trade unionists, agriculturalists); (3) training of professionals and scientists who deal directly with environmental problems (e.g., ecologists, hydrologists, meteorologists, sanitary engineers, etc.).

After reviewing ongoing activities in environmental education and training by their respective organizations, participants indicated plans for future actions based on the following objectives:

- integration of environmental education into cooperative UN programmes, projects and activities;
- the exchange of information and experiences in environmental education and training;
- development of educational programmes and materials for environmental education and training;
- incorporation of an environmental dimension in pre- and in-service training of education personnel;
- promotion of research, experimentation and evaluation in environmental education.

In order to enable UNEP to prepare a report concerning ongoing and planned activities of UN agencies and organizations in implementation of the Tbilisi recommendations, participants agreed to provide UNEP with completed details on current and forthcoming activities. Other UN organizations have been solicited as well for similar information.

UNEP's own contribution to implementation of the Tbilisi Conference, as it emerged from the above joint programming meeting, is along these general lines:

1. integration of environmental education into cooperative programmes, projects and meetings with which UNEP is concerned, involving conceptualization of environmental problems so as to reflect these in education and training programmes; promotion of suitably coordinated UN environmental education and training programmes; and support for the second phase of the Unesco-UNEP International Environmental Education Programme (IEEP) as part of a Tbilisi implementation plan;

2. the exchange of information and experience in environmental education and training, such as: (a) promotion of linkages and coordination between existing mechanisms, e.g., the International Referral System (IRS) and the IEEP network; (b) the use of UNEP and UNEP-supported publications as dissemination media; (c) production of technical reports and papers, including the yearly "State of the Environment" report, translation of them into information and teaching materials which will be widely distributed; (d) use of UNEP regional offices to contribute to the dissemination of information on environmental education and training and as links with other agencies and regional bodies; (e) publication of monographs which deal exclusively with environmental themes not already covered by other agencies and organizations, but in consultation with them; (f) preparation of a special "State of the Environment" report – ten years after the Stockholm Conference on the Human Environment in 1972 – based on material prepared from that conference and developments since then, which will be published as a scientific work, a popularized version for the general public and as a report to UNEP's Governing Council.

3. continued promotion and support of programmes for formal and nonformal environmental education and training in cooperation with UN agencies and organizations concerned; in this connection special attention will be given to support of activities for the development of teaching/learning materials and incorporation of the environmental dimension in pre-service and in-service training of education personnel; research, experimentation and evaluation in environmental education and training will continue to be promoted.

International Workshop of Nongovernmental Organizations

An international workshop on cooperation among nongovernmental organizations (NGOs) in the field of environmental education took place in Geneva in October 1977, immediately following the Tbilisi Conference. The event occurred as a result of the joint initiative taken by UNEP and the Environment Liaison Centre (ELC), which is a focus for international NGO liaison, having evolved from the nucleus of organizations present at the Stockholm Conference on the Human Environment in 1972.

Representatives at the Geneva workshop had attended the Tbilisi Conference and turned their attention to recommendations on post-Tbilisi actions for the remainder of the ELC's current 10-month project, and thereafter. The most pertinent group of recommendations, titled "Strategies Concerning a Central Organization for NGO Cooperation in Environmental Education," involved the development and financing of a new three-year project emphasizing the need for a central body to facilitate the work of NGOs in environmental education at the regional level.

Among the functions of such a central body would be: (1) distribution of information about the availability of environmental education materials and aids; (2) coordination of the distribution of the material itself; and (3) recording evaluations of the materials made by user NGOs.

Integrating Science Education Around Environmental Themes

The educational challenges which are posed by science and technology-related environmental problems were referred to many times at the Tbilisi Conference. Among the Conference recommendations were several concerned with the need to pay greater attention, in school science courses, to environmental issues.

Some of the implications for science education of environmental challenges were examined more deeply in the course of the International Conference on Integrated Science Education which was held in Nijmegen, Netherlands, in April 1978. This conference, which was organized by the International Council of Associations for Science Education (ICASE) and the Netherlands Association for Science Education, with support from Unesco, was attended by 271 participants from 55 countries. A survey of integrated science courses which was presented to the conference revealed that there is a widespread and steadily-growing trend towards using the environment as an integrating theme in science education.

One working group of the Nijmegen Conference was devoted to exploring the special contribution that integrated science courses can make to environmental education. The interdisciplinary nature of such courses, covering, as many of them do, the whole spectrum of the physical and biological environment of a student, facilitates a study of major issues, such as pollution, energy and the rational use of natural resources.

The student's natural environment can be used to identify problems, develop alternative solutions, induce value-clarification and promote decision-making capacities – all of which are major concerns in environmental education. While not all the content of integrated science courses can be of an environmental nature, it was agreed by the conference that a large environmental component was desirable in most integrated science courses.

Among the many environmentally-oriented science courses referred to during the Nijmegen Conference, one of the most comprehensive mentioned was the Australian Science Education Project, inaugurated in 1969, now widely used in all States of Australia. This course is based on a five-point environmental scheme relating to the way in which individuals function – as individuals, as groups, in the enlargement of their perceptions and energies through use of tools and instruments, in relation to technology and its applications, and in relation to change and the environment. At the primary level, the African Primary Science Programme, inaugurated similarly in the late 1960s, was also noted as environmentally oriented. The ALECSO Integrated Science Project for the Arab States, inaugurated in 1975, is likewise based on environmental themes (see below).

* * *

Of special note is the Asian Regional Symposium on Environmental Integrated Science Education, held in New Delhi, India, 29 December 1977 through 2 January 1978, by invitation of the All India Science Teachers Association. It was co-sponsored by the National Council of Educational Research and Training and ICASE with the active support of Unesco.

The Asian Regional Symposium was attended by participants from nine countries. Seven of these were in the Asian and South Pacific regions, the two others were Belgium and the United Kingdom. The purpose of the symposium was to review educational and scientific reasons for the introduction of environmental integrated science courses in the formal school system at various levels, and to prepare suggestions for the development of materials, the training of teachers and ways and means of implementing these courses.

The symposium reviewed current activities in integrated and environmental science education programmes among participating countries. It then considered the various connotations of the terms integration and environment as applied to science curricula throughout the world. Finally the key issues involved in the development, testing and implementation of environmental science education curricula at various levels were considered. (For a report on the symposium, write: All India Science Teachers Association, Sardar Patel Vidyalaya, Lodhi Estate, New Delhi 110003, India.)

ALECSO

The Arab Educational, Cultural and Scientific Organization (ALECSO) initiated its environmental education activities in 1972. At the general education level, the organization published an EE source book for curriculum planners, teachers and textbook writers with the support of UNEP which was presented to the Tbilisi Conference. ALECSO is planning model sample units of audio-visual aids for the use of the source book by teachers and students in primary and secondary schools.

Since Tbilisi, an EE source book for universities and institutes of higher learning, titled *Man and Environment*, has been issued for the use of teachers with the aim of enabling them to incorporate the environmental dimension in the curricula. Previously ALECSO developed a course in environmental education for teacher colleges with a selected number of colleges to test it. Summer courses have similarly been developed for in-service teacher training.

As mentioned above, ALECSO is conducting an integrated science project, based on environmental themes, in intermediate schools of the Arab world. Recently a course on environment and environmental education was given to a group of radio and television script writers, and another course to a group of Arab journalists.

There is a special plan on the part of ALECSO for the environmental education of senior officials of ministries of education of Arab countries, so as to stimulate and promote the environmental education and training of teachers in their respective states.

At the National Level

United States

The 1978 National Leadership Conference on Environmental Education was held in Washington, D.C., U.S.A., 28-30 March 1978. It was organized by the Alliance for Environmental Education, a national organization representing thirty-three nongovernmental organizations. It was hosted by the National Wildlife Federation, the American Forest Institute and the National Education Association.

Eighty-seven participants reviewed the recommendations of past conferences and developed specific action recommendations for the implementation of a national strategy. Special attention was given to the recommendations for Member States that came out of the Unesco-UNEP Intergovernmental Conference on Environmental Education held in Tbilisi, USSR, last October.

Dr. Mary F. Berry, Assistant Secretary for Education, Department of Health, Education and Welfare, who had led the U.S. Delegation to the foregoing conference, gave an address at the opening plenary session. She spoke on the significance of the Intergovernmental Conference to the educational community

in the United States, the role of the Federal Government in implementing its recommendations and the need to nurture and preserve the "spirit of Tbilisi." Other members of the U.S. delegation also highlighted certain aspects of the Tbilisi Conference and participated in the discussions that followed.

In developing a national strategy the conferees divided into five working groups to discuss: the federal role, state legislation, state-level networking, in-service teacher education and the accessibility and dissemination of materials. Each group developed recommendations and then thought through, and specified in their reports, the obstacles to be encountered in implementing the recommendation and strategies for overcoming them. They also made concrete suggestions regarding the assignment of responsibility, practical time-lines and procedures for monitoring their implementation.

Since the National Leadership Conference on Environmental Education, task forces on the federal and state levels have directed activities toward achievement of its recommendations, a summary of which follows:

- A national center for environmental education should be established under the Assistant Secretary of Education.
- The Alliance for Environmental Education should develop a higher priority and greater substantive commitment for environmental education on the part of its member organizations.
- A cooperative relationship should be strengthened among Alliance members to implement environmental education projects and programmes.
- Environmental education priorities and a more effective communication of the large variety of environmental education related programmes and projects within the U.S. Office of Education should be established.
- States should adopt legislation to require the establishment of an office of environmental education within the state department of education and financed through state funds.
- State officials should utilize networks to facilitate environmental education communication, dissemination and implementation.
- Arrangements should be made for representatives from the Alliance to meet periodically with the Federal Interagency Subcommittee on Environmental Education (FICE).
- Several states within the Western Regional Environmental Education Council should experiment in developing networks and linkages among state agencies during the next twelve months to strengthen the environmental education effort.
- The Office of Environmental Education of the Department of Health, Education and Welfare should either provide financial support to the state consultants or convene them occasionally to obtain their views.
- Successful environmental education projects funded under the Environmental Education Act should be validated and entered into the national diffusion network.
- The Office of Environmental Education and the Organization of State Consultants should establish working relationships to clarify federal policy and programme direction for the state consultants.
- The National Science Foundation should improve its liaison with nongovernmental organizations through participation in annual conferences and meetings.
- A study should be made to isolate those EE components of in-service training that have the greatest actual or potential impact upon the teacher.
- A sustained effort should be made to incorporate environmental education into the Teacher Center movement. (Teacher Centers are sites operated by Local Education Agencies for in-service teacher training and to assist teachers in the use, development and implementation of curricula to meet the needs of the community.)
- The Tbilisi Conference goals and objectives for environmental education should be further delineated for use by teachers.
- A standard classification system for environmental education should be developed to provide a method for categorizing material in libraries and resource centers.

Message to the U.S. Conference from Unesco's Director-General

Extract:

The work achieved by the Tbilisi Conference will enable Unesco to pursue and strengthen its action in environmental education and to move into a more operational phase. As an intergovernmental organization, Unesco relies on the achievements of its individual Member States for the realization of its programme objectives. The United States has, for its part, made well-known contributions to the development of environmental education and it is significant to note that the work begun at Tbilisi is providing the stimulus for further progress. Your country will thus share with the international community efforts towards an improved quality of life for all humanity.

The Tbilisi Conference acknowledged the importance of the role which nongovernmental organizations can play in this field; they have often provided an important leadership by calling public attention to essential environmental issues and by being among the first explorers of new ideas, principles and techniques of environmental education. The Alliance for Environmental Education has achieved a notable record in this regard. The Alliance and other nongovernmental organizations, in cooperation with governmental agencies and institutions, have significantly contributed to a considerable number of national and international undertakings and I am convinced that you will continue this pursuit of excellence in educational and environmental matters.

Union of Soviet Socialist Republics

The Soviet Union has drawn up a plan for developing education in the field of environmental protection and improvement in the light of the Tbilisi Conference recommendations. The plan was approved at a session of the Tbilisi Conference Organizing Committee which took place on 13 April of this year at the State Committee for Science and Technology under the USSR Council of Ministers.

The plan provides for holding a national conference on environmental education in Viln'yus, Lithuania in the summer of 1979. Research will also be conducted to assess standards of education in this field and to find ways and means of raising them effectively in the near future. The experiences of other countries and international organizations and the results of research under Unesco's Man and the Biosphere programme will also be studied.

According to the plan, emphasis will be put on the pre- and in-service training of environmental specialists to improve their skills. The plan also envisages a series of lectures on environmental protection and improvement for heads of institutions and establishments; seminars for students of nature preservation courses; and the organization of groups of lecturers on the environment at scientific and technical societies. The last measure is aimed at enabling lecturers to educate industrial workers on the aspects and principles of environmental protection.

Trends in Environmental Education, published by Unesco in 1977, as well as the proceedings of the Tbilisi Conference, will shortly be printed in Russian. Another edition of the *Multilingual Dictionary of Nature Protection Terms*, published by the International Union for the Conservation of Nature and Natural Resources (IUCN), will also soon come off the press.

In order to carry out the plan for developing environmental education so as to deal comprehensively with environmental protection and the rational use of natural resources, a Department of Education in the Field of Nature Protection has been established under the auspices of the Interdepartmental Scientific and Technical Council which is under the State Committee for Science and Technology of the USSR Council of Ministers.

Federal Republic of Germany

The Unesco Commission of the Federal Republic of Germany, in cooperation with the Institute for the Teaching of Natural Sciences, Kiel, held a meeting on environmental education in Munich from 26 to 28 April 1978. The meeting was organized with the assistance of the Federal Ministry of the Interior and the Bavarian Ministry for Regional Planning and Environmental Matters.

The aim of the conference was specifically to discuss the results and recommendations of the Intergovernmental Conference on Environmental Education at Tbilisi and to work out suggestions for their application in the Federal Republic of Germany.

The meeting was attended by 70 representatives of relevant Federal and Länder Ministries, teacher associations, environmental organizations and radio/television broadcasting stations. Participants from Denmark, the Netherlands, Luxemburg and Switzerland, as well as representatives of Unesco and of the European Community, presented reports on actions taken as a follow-up to the Tbilisi Conference.

Since recommendations adopted by the Tbilisi Conference comprise a large variety of measures which have to be put into concrete terms and adapted to the national needs and structural conditions of individual countries, the Munich Conference concentrated on those recommendations which could lead to follow-up measures for fostering the development of environmental education at the national level. As far as the Federal Republic of Germany was concerned, the following areas were considered of special interest:

1. cooperation among public and private institutions for the development of life-long environmental education;
2. the role of information and the mass media in environmental education;
3. environmental education in the context of vocational education and training;
4. local and supraregional environmental problems in the context of formal education;
5. interdisciplinary environmental education in the context of teacher training.

Discussions were organized within the above framework. Participants at the Munich Conference agreed upon 33 recommendations, which focussed on these points:

- Environmental education is to be considered as an overall educational process which should not be limited to formal education and young people.
- To foster understanding of environmental problems and to develop favourable attitudes towards improvement of the quality of the environment among specific social and professional groups are tasks which cannot be fulfilled by a single institution. State and public institutions cannot take over this task alone. Environmental education calls for concerted efforts to be made by both public and private institutions, ensuring that private institutions dispose of the necessary funds and administrative facilities to be able to cope with their social task.
- The preceding also involves a continuous promotion of environmental education programmes. Participants at the Munich Conference therefore suggested the establishment of an environmental foundation which should work on a model for private foundations in the field of science and which should be charged with promotion of environmental education programmes and relevant public information campaigns.

Participants in the working groups of the Munich Conference stated that the organizational and institutional prerequisites for effective realization of environmental education are still insufficient in nearly all areas. Great importance therefore was attached to recommendations concerning adaptation and improvement of existing organizational structures to this purpose, such as, the development of major projects related to environmental education at teacher-training institutions; the setting up of interdisciplinary editorial groups at radio/television broadcasting stations; modification of training and examination regulations in the field of vocational education; training of personnel to advise schools on implementation of environmental education programmes; greater inclusion of bodies and advisory committees in such cooperative frameworks as the Working Group for Problems of the Environment (Arbeitsgemeinschaft für Umweltfragen).

Lack of systematic flow of information in the field of environmental education was considered a serious handicap. Though many institutions and publishing firms produce a variety of materials relating to environmental education, individuals and organizations are often at a loss as to where to procure these materials. Participants at the Munich Conference therefore recommended the establishment of supraregional information agencies working in an interlocking system.

In the process of developing environmental educa-

tion and training special importance was attached to information and guidance of potential multipliers, such as teachers in the fields of school and out-of-school education and vocational training; and group leaders of associations, federations, trade unions, political parties, etc. Throughout all training stages of teaching personnel, it was recommended, subjects related to environmental education and relevant teaching methods should become an integral part of education programmes in order to stimulate active participation by young people and adults in the solution of environmental problems.

The 33 recommendations of the Munich Conference have been published and distributed to the agencies concerned and will be used as guidelines for the promotion and development of environmental education in the Federal Republic of Germany. The final report of the Munich Conference is being prepared by the Institute for the Teaching of the Natural Sciences, Kiel, Federal Republic of Germany.

United Kingdom

A national seminar — titled, "Response to the Challenge of Tbilisi" — was convened on 27 June 1978 in London, England, by the Education Committee of the Institution of Environmental Sciences (IES), supported by the National Association for Environmental Education and the Council for Environmental Education.

The seminar brought together teachers and educators from all levels of the formal education system. All major nongovernmental organizations with a specific responsibility for environmental education were represented. Also present were observers from government agencies and departments concerned with either education or environment. Copies of the United Kingdom documents for the Tbilisi Conference, as well as copies of the Conference's Final Report, were provided to participants by the Department of Education and Science.

The seminar was presided over by Professor Elizabeth Perrott of the University of Lancaster and chairman of the IES Education Committee. In her opening speech, the chairman referred to the objectives for environmental education as spelled out in the Tbilisi Final Report, stressing that inevitably when objectives are defined for activities on a worldwide scale, they are bound to be expressed in the broadest of terms, and that it was the work of the seminar to consider these recommendations and how they could best be achieved in the United Kingdom context.

The programme of the seminar was divided into two parts. The first part provided an opportunity for those who attended the Tbilisi Conference to report back in person to their colleagues. The second offered the occasion for informal discussion, so that specific problem areas of environmental education in the United Kingdom could be identified and once identified, what actions should be undertaken to ensure implementation of the Tbilisi recommendations.

It was recognized that:

- While the United Kingdom system, which allows the maximum freedom to the teacher, can stimulate innovation, it does lead to lack of uniformity on a national scale in the provision for environmental education within the system; as well as on a geographical basis. Secondary and further education were specifically singled out as areas suffering in this respect.
- There is a need in the United Kingdom to strengthen organizational structures both in terms of effective joint action by nongovernmental organizations as well as cooperation between these organizations and governmental departments and agencies. It was felt that the full potential role of NGOs was still to be completely recognized.
- There is a need for a better resource allocation to environmental education on a national scale, especially for activities in the nonformal education sector. Resources available for out-of-school youth work were deemed particularly inadequate.

It was recommended that existing links between the Department of Education and Science and the Department of the Environment be strengthened and that new interdepartmental links be formed. It was considered most essential for the development of environmental education and implementation of the Tbilisi recommendations that those concerned with education, and those concerned with the environment, coordinate their efforts.

The following actions are planned by the Education Committee of the Institution of Environmental Sciences, either on its own or jointly with other bodies:

- monitoring developments in the United Kingdom in respect to the Tbilisi recommendations, to be done on a national basis, while at the same time maintaining close regional and international links;
- considering ways of improving dissemination of information concerning the Tbilisi Conference and its recommendations;
- arranging a series of meetings with elected representatives and officials of government departments and agencies in order to clarify governemental policy in respect to environmental education;
- producing and distributing an EE News Sheet which will report on national and international EE activities;
- convening another national seminar in 1979 to review the progress made and the directions taken since the present seminar.

Czechoslovak Socialist Republic

A national scientific conference on implementation of the recommendations of the Tbilisi Conference has been announced for September of this year by officials of the Federal Government of the Czechoslovak Socialist Republic.

Organized by the Czech Ministry of Education in cooperation with the Ministry of Culture and the Environmental Council under the sponsorship of the Czechoslovak Commission for Unesco, the conference will take place in the Krkonose (Giant Mountains) National Park of Bohemia at Svatý Petr, 26-29 September 1978.

Participants will represent central educational institutions, secondary schools and universities, trade unions, organizations of youth and women as well as the ministries and governmental bodies mentioned.

Both formal and nonformal environmental education will be discussed in terms of the Tbilisi Conference recommendations and the implementation measures that have been planned.

Members of the Czechoslovak delegation to the Tbilisi Conference will present a report on that intergovernmental meeting. Participants will also receive documentation on the Conference – its Declaration, recommendations and Final Report – as well as details on governmental actions to be taken as a follow-up. The results of the Czech National Conference are expected to serve as a basis for future activities in environmental education and will be formally submitted to the Environmental Councils of the Czech and Slovak Socialist Republics as well as to all institutions involved in educational activities.

* * *

The Tbilisi Conference took special note of the international film festival, dedicated to environment, known as **Ekofilm**, which has been held regularly every year since 1974 in Czechoslovakia – the first country of Europe to do so. The Conference underlined the importance of utilizing film and television as well as other audio-visual techniques for the wide diffusion of environmental education and considered the Czech film festival a particularly fine stimulus for this effort.

Partly as a follow-up to the Tbilisi Conference, the theme of this year's Ekofilm Festival, 22-26 May, was "Education for the Protection of the Human Environment." The principal prizes went to Czech, German, Russian, British and Australian documentary films.

Other Member States

A number of Member States, many of which are to be found in the developing world, have taken their own first steps in the follow-up of the Tbilisi Conference and its recommendations on environmental education. They are planning national conferences, seminars and training activities, the latter with the assistance of Unesco.

The national training activities, in particular, have as their purpose the orientation of key education personnel – administrators, supervisors, planners, curriculum developers, teacher educators, etc. – or groups of selected teachers in the planning and development of environmental education.

Programmes for such seminars and workshops are being built around such themes as:

1. definition of environmental education in terms of its goals, objectives and characteristics and in the light of the Tbilisi Conference discussions, recommendations and conclusions;
2. identification, study and analysis of environmental problems at the national level and the role played by education in their solution;
3. strategies for the development of environmental education inside and outside the formal school system.

Reports on these national conferences, seminars and training activities will be published in *Connect* as they are received.

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Connect

UNESCO-UNEP ENVIRONMENTAL EDUCATION NEWSLETTER

Vol. III, No. 4. December 1978

The International Environmental Education Programme 1979-1980

Initiated by Unesco in cooperation with the United Nations Environmental Programme (UNEP), the International Programme in Environmental Education has now completed its first, three-year phase. Similarly based on a cooperative project with UNEP, the second, operational phase is about to begin ; a number of activities started in the first phase will be continued, as was originally planned – pilot projects, training activities, publications, the newsletter *Connect*, etc.

The 20th General Conference of Unesco, held in Paris, 24 October-28 November 1978, has approved the proposed resolution and favorably considered the work plan and budget concerning general environmental education for the 1979-1980 biennium. Specifically the **resolution** states that the General Conference :

1. Authorizes Unesco's Director-General to carry out the activities contributing to the achievement of Objective 7.7 (Contribution through general education and through public information to the improvement of individual and collective behaviour towards the human environment and to the perception of its quality) and corresponding to the following theme: "Development and promotion of general environmental education";

2. Invites the Director-General in carrying out the above-mentioned activities to take into account the recommendations and the Declaration of the Intergovernmental Conference on Environmental Education, held in Tbilisi, USSR, in October 1977, and in particular:

(a) to cooperate with Member States in their efforts, in the context of lifelong education, to incorporate environmental education into the different levels and types of formal and nonformal education, of which it must form an important dimension, as well as to stimulate subregional, regional and international cooperation for this purpose.

(b) to cooperate with various agencies and programmes of the United Nations concerned, particularly with the United Nations Environment Programme, as well as with the appropriate intergovernmental and nongovernmental organizations, in order to promote international efforts towards the development of environmental education in the Member States.

Similarly the **work plan** favorably considered by the General Conference indicates that under the same objective :

Activities will aim at helping Member States in their efforts to incorporate environmental education into formal, including higher educational levels, and nonformal education for the public in general (children, young people and adults) with a view to providing a better understanding of environmental problems and teaching people to behave and act in a way which favours the preservation and improvement of the environment.

In this context, and taking into account the recommendations of the Intergovernmental Conference on Environmental Education, priority during the 1979-1980 biennium will be given to the formulation and implementation of policies for the development of environmental education, the training of personnel, research on interdisciplinary approaches to environmental education, support to innovative activities for the development of teaching and learning methods and materials, including the utilization of mass media, and establishment of national and regional mechanisms for concerted action for the development of environmental education. The exchange of information and experiences for the development of environmental education will be promoted at subregional, regional and international levels. These activities will be undertaken in cooperation with UNEP and other United Nations agencies concerned and with appropriate intergovernmental and nongovernmental organizations.

Further, these programme activities of the Education Sector will be carried out in coordination with those of other sectors of Unesco - Natural and Social Sciences, Culture and Communication.

Discussions of the Education Commission

During the discussions of the **commission on education,** delegates of 22 Member States referred to the proposed programme concerning general environmental education (Objective 7.7). All speakers expressed their general support for Unesco's environmental education programme and the proposed activities. Several speakers said that the recommendations of the Tbilisi Conference had clarified the concepts and modalities of environmental education and had provided the basis for future developments and activities, indicating their view that the proposed activities closely reflect these recommendations. A number of speakers described the activities in their countries for following up on the Conference at the national and local levels.

Most speakers stressed the importance of including an environmental component or dimension at all levels of formal and nonformal education, of sensitizing all sectors of the population regarding the environment – its problems, preservation and improvement – and the responsibility of individuals in this regard. A number of delegates talked of the special characteristics of environmental education, particularly its interdisciplinary and problem-solving approach; emphasis was similarly placed on viewing the environment in its totality in the development of environmental education.

A number of activities was stressed for the promotion and development of environmental education. Several delegates emphasized the exchange of ideas, information and experience among Member States. Many delegates spoke of the necessity for developing curricula, content, methods and materials and of adapting environmental education to local, national and regional situations. Experimentation and research in the field of environmental education were urged by a number of delegates. The training of personnel for general education as well as for professional groups and decision-makers was stressed by several speakers. In this connection, several delegates emphasized the importance of including higher education and the training of professional groups, such as engineers and those involved with environmental concerns in the mass media.

In view of the intersectoral character of environmental education, several delegates mentioned coordination within the Unesco secretariat as well as coordination and cooperation among members of the United Nations system in environmental education programmes. Underlining Unesco's particular mandate and competency in the field of general education, several delegates gave their full support to a continuation of the cooperation between Unesco and UNEP in the area of environmental education. Cooperation with NGOs was urged by two speakers. Many delegates offered cooperation with Unesco in the development of its environmental education programme.

It was suggested that the impact of tourism on the environment should be considered in the context of environmental education. Another indicated that his country's experience might serve as a model for the coordination of school and out-of-school education, as well as of school and community. One speaker advised particular care in the preparation of a planned source book on environmental education, to ensure its adaptability in the different regions of the world. Two delegates proposed that the Director-General report at the next biennial meeting of Unesco's General Conference on environmental education activities in the follow-up to the Tbilisi Conference. There were also a number of requests for Unesco's support for the development and realization of environmental education in their respective countries.

The representative of Unesco's Director-General noted the importance attached by speakers to the environmental education programme just discussed and the high level of support for the proposed activities thereunder. He expressed appreciation for the information provided by some speakers on important activities undertaken in their countries, and for their proposals of cooperation with Unesco. He said that these proposals, as well as all suggestions concerning the proposed activities, will be carefully studied in connection with the execution of the programme and the planning of future programmes.

Concerning the place and importance given to environmental education at the higher educational level, he explained that other activities, such as research and studies, as well as workshops and pilot projects, will include environmental education for the university level and that, furthermore, there are activities at the higher education level for this objective in the programmes of other Unesco sectors. With regard to coordination within Unesco of activities under Objective 7.7, he pointed out that this is assured by an intersectoral committee.

Concerning coordination among United Nations agencies in the field of environmental education, the representative of the Director-General referred to the recommendations of the United Nations Conference on the Human Environment (Stockholm, 1972) and to efforts already undertaken in this direction, including an interagency meeting convened by UNEP in cooperation with Unesco June 1978 in order to examine the contribution of various units of the United Nations system to implementation of the Tbilisi recommendations (see *Connect*, Vol. III, No. 3, September 1978). With respect to the cooperation of Unesco

with nongovernmental organizations concerned with environmental education, he said that Unesco attaches importance to such cooperation and will continue to work with appropriate NGOs in the execution of programme activities in this field.

Referring to the Tbilisi Conference, he pointed to a distinction made there between three categories of environmental education and training: (1) general environmental education of children, youth and adults at all levels of formal and nonformal education; (2) environmental education of professionals, such as engineers, doctors, architects, etc., whose actions have implications for the environment; and (3) the training of specialists in environmental matters. He pointed out that within the United Nations family, general environmental education falls under Unesco's responsibility, while training of different categories of professionals and specialists concerns Unesco and other United Nations agencies, such as WHO, FAO, ILO, etc.

Programme Actions, 1979

Support to research and experimentation in environmental edueation

Technical support will be given to research and experimentation in environmental education at the national, regional and international levels, and their results disseminated. Special attention will be given to the development of methodologies and materials for interdisciplinary programmes combining, for example, the natural and social sciences and the arts. A series of case studies will be prepared and disseminated. These will examine strategies and mechanisms for the incorporation of environmental education into formal and nonformal education in different socio-cultural, economic and ecological contexts.

In cooperation with UNEP an interdisciplinary seminar will be organized to study different ways and methods of incorporating general environmental education into formal and nonformal education. With a view to standardizing environmental education terminology, a glossary will be prepared. Support will be given to research and experimentation in environmental education.

Action 1 – launching the series of case and comparative studies on environmental education (EE):

- publication of interdisciplinary and multimedia modules on environmental education for primary schools;
- preparation of similar modules for secondary schools;
- preparation of interdisciplinary EE approaches through the use of simulation;
- preparation of evaluation methodologies and instruments for interdisciplinary and problem-solving EE programmes for the use of educators;
- publication of multimedia communication systems for the environmental education of the general public and particular socio-professional groups. (Note : all preparations are aimed at eventual publication.)

Action 2 – support of a new series of pilot projects devoted to the development of innovations; promotion of research in environmental education and publication of a report on completed pilot projects.

Action 3 – revision and completion of the first draft of a multilingual glossary of terms in environmental education.

Action 4 – planning and preparation of an international seminar on interdisciplinary EE approaches to be convened in 1980.

Promotion of the exchange of information and experience in environmental education

For the purpose of promoting the exchange of information and experience among national, regional and international centres and institutions, the environmental education information system of Unesco will be updated, reinforced and developed and documentation services at Unesco Headquarters and Regional Offices will be strengthened. An international directory of institutions and programmes in the field of environmental education will be published in English, French and Spanish, together with information about curricula being followed in the different Member States.

Information and documentation activities at the international and regional level will be further reinforced with the cooperation of UNEP.

In particular, the newsletter aimed at informing Member States on important events in the field of environmental education will continue to be published. Special attention will be given to the exchange of information on activities relevant to the training of personnel and the development of teaching and learning materials for environmental education, including materials for use by the mass media.

Action 1 – preparation and publication of a revised directory on environmental education institutions.

Action 2 – preparation and publication of a preliminary directory on environmental education periodicals.

Action 3 – preparation of a preliminary directory on environmental education programmes and activities.

Action 4 – preparation of an updated edition of the international annotated bibliography on trends in environmental education (see IBE *Bulletin No. 200*, Geneva, 1976).

Action 5 – development of documentation and information services at the Headquarters and Regional Offices of Unesco.

Action 6 – publication and diffusion of four issues of the International EE Programme newsletter *Connect* in Arabic, English, French, Russian and Spanish.

Action 7 – preparation of a publication tentatively titled "Environmental Education in the Light of the Tbilisi Conference."

Action 8 – preparation, in cooperation with UNEP, of an international symposium on environmental education to be convened in 1980, whose objective will be to examine ways and means of promoting concerted efforts in the field of environmental education between various national agencies concerned with the environment, such as education, planning, information, agriculture, health and special environmental agencies.

Promotion of development of content, methods and materials for environmental education

With a view to promoting development activities for the incorporation of environmental education into formal and nonformal education, a teacher's guide to methods regarding the incorporation of environmental

education in the school curricula will be prepared, and prototype programmes for the environmental education of the general public will be developed. Preparation of a special programme on environmental education for young children will be initiated.

With the collaboration of UNEP, a source book on environmental education will also be prepared. The possibility will be explored as well of promoting the preparation of model teaching and learning materials, including textbooks, through competitions, and the production and circulation of audio-visual materials, including films for environmental education, will be encouraged.

Action 1 – preparation, publication and diffusion of interdisciplinary and problem-solving prototype modules, including associated model teaching/learning materials on environmental education, for (a) the general public and (b) primary and secondary education.

Action 2 – revision and regional adaptation of the experimental version of a teacher-training manual.

Action 3 – initial work in the preparation of a sourcebook on environmental education.

Training of personnel for environmental education

Action will continue to be taken to introduce the elements of environmental education into training programmes for educational administrators, planners, supervisors, teacher educators and curriculum developers. To this end, multimedia educational modules for teacher educators will be developed in collaboration with appropriate institutions. National and subregional pilot training activities will be supported. Exchange of personnel, programmes and instructional materials relevant to pre-service and in-service teacher training will be promoted.

It is expected that, in cooperation with UNEP, regional training workshops for teacher educators in different countries will be organized. A fellowship programme for the training and retraining of key personnel required for the development of environmental education, especially in developing countries, is also envisaged.

Action 1 – organization of regional workshops on environmental education whose participants will be key personnel – teacher educators, curriculum developers, supervisors, educational planners and administrators – and whose objective will be to develop strategies for: (a) establishing EE programmes at the national level; (b) curriculum development and teaching/learning materials for primary and secondary schools and teacher-education institutions; and (c) training of teachers for primary and secondary schools and teacher-education institutions.

These regional workshops in environmental education are involved:

(a) a regional workshop in Africa, which will have been convened on 12-20 December 1978 in Dakar, Senegal;

(b) regional workshops in Asia, the Arab States and Latin America.

Action 2 – preparation of subregional workshops on teacher-training programmes in environmental education to be convened in 1980, whose objectives are: (a) to formulate teacher-education programmes for the pre- and in-service training of teachers and supervisors for primary and secondary schools and for the staff of teacher-education institutions, based on the strategies developed by the regional workshops held in 1978-1980; (b) to review an experimental version of a teacher-training manual in environmental education; and (c) to promote the exchange and dissemination of ideas, programmes and instructional materials relevant to the promotion of pre- and in-service teacher-training in environmental education.

Action 3 – preparation of a regional workshop on environmental education in Europe to be convened in 1980.

Action 4 – supporting innovative national training activities in environmental education in Asia, Africa, Latin America, the Arab States and Europe.

Action 5 – preparation of experimental versions of teacher-training modules in environmental education with the collaboration of appropriate institutions: (a) pre- and in-service primary school teacher-training modules; (b) pre- and in-service secondary school teacher-training modules for science (chemistry, physics, biology, earth sciences, integrated science) and mathematics teachers; and (c) pre- and in-service secondary school teacher-training modules for social science (sociology, geography, history, philosophy, religion) teachers.

Cooperation with Member States for the development of environmental education

Unesco will cooperate with Member States, at their request, through the provision of technical advice on the formulation of policies and the design and implementation of projects aimed at the integration of environmental education into the different levels and types of formal and nonformal education. Attention will be given to the establishment or reinforcement of national structures for the development of environmental education, including the development of appropriate national machinery for concerted action.

Action – organization of technical advisory missions on the formulation and implementation of policies and activities for the development of environmental education.

Participation in the activities of Member States

Unesco will participate in the activities of Member States, on request, for the development of teaching materials or training in environmental education, by making available consultants, fellowships and equipment and materials, as well as financial support for seminars and training courses.

Poland

A seminar concerning European universities was held in Warsaw, Poland, 26-29 June 1978. The theme: "University, Environment and Society". Sixty representatives of universities of 20 European countries participated: Austria, Bulgaria, Byelorussian SSR, Canada, Czechoslovakia, Federal Republic of Germany, Finland, France, German Democratic Republic, Greece, Hungary, Iceland, Italy, Netherlands, Norway, Poland, USSR, United Kingdom, USA, Yugoslavia. The Secretary General of the International Association of Universities and a representative of Unesco were also present.

Discussions were conducted in the light of recommendations of the Helsinki Treaty (1975) as well as those of the Tbilisi Conference (1978) relative to the role of universities in the face of the environmental challenge. There was general agreement that universities had a multiple role: (1) the training of specialists who deal directly with environmental problems, such as engineers, hydrologists, foresters, urban planners, agriculturalists, etc.; and (2) information and education of the general public in view of permanent and continuous instruction. The university was deemed to be involved as well in: (3) fundamental and applied research concerning the environment and development, that is, ecodevelopment. An accent was placed on university work with the mature, retired sector of the adult population.

It was emphasized that studies must be interdisciplinary and research multidisciplinary with full recognition of a constraining, traditional approach to education and research in terms of single disciplines, an approach that participants at the seminar thought most in need of change. Similarly there was recognition of an increasingly vast part of the population that has reached the age of early retirement or greater leisure, which, in turn, it devolves on universities to incorporate in its educational planning and programming.

Because of these new roles and concerns of the university, it was strongly recommended at the Warsaw seminar that means be made available for inter-university and international cooperation, especially in environmental education. Such cooperation could be conducted on a bilateral basis between universities of neighboring countries and/or multilaterally among the universities of Europe or its subregions (Mediterranean, Baltic, Balkan, etc.). The international character of the environment itself, participants concluded, made such cooperation not only advisable but necessary.

Czechoslovak Socialist Republic

A national conference dealing with implementation of the recommendations of the Tbilisi Conference on Environmental Education within both the formal and nonformal educational systems of the Czechoslovak Socialist Republic was held, as announced (see the previous *Connect*), in the Krkonoše National Park of Bohemia, Svatý Petr, 26-29 September 1978.

Delegates from the Czech and Slovak Socialist Republics participated, representing different central institutions, ministries, national committees, mass media, etc., as well as the National Front and its organizations (Socialist Youth Movement, Trade Unions, Women's Organization, conservation and cultural organizations, Red Cross, and others), the Czechoslovak Academy of Sciences and the Academy of Agricultural Sciences. Educators too were represented by teachers, university professors and administrators of pedagogical institutes. In all the participants totalled 128, creating a large and widely-varied forum for the exchange of ideas, experiences and information.

The conference was divided into two parts, the one dealing with an assessment of the results thus far of the Tbilisi Conference in the educational systems of the Czech and Slovak republics and of environmental education in general, and the other concentrating on specific aspects of educational and pedagogical activities in the Krkonoše National Park itself, which was coincidentally celebrating the 15th anniversary of its establishment.

The formal Recommendation adopted by the conference expressed appreciation for the Tbilisi Conference and its results as well as thanks to the various authorities and bodies which aided in implementing government decisions of both national republics in the field of environmental education. An included series of specific recommendations dealt with different items of the conference agenda, notably:

- that environmental education should be an integral part of the educational systems of Czechoslovakia, closely following, studying and implementing the principles and guidelines of the Unesco-UNEP International EE Programme:
- that bilateral and international cooperation be fostered, particularly in the field of environmental education;
- that Unesco and other UN materials be widely distributed and conversely that information about EE activities in Czechoslovakia be made known to Unesco and the UN system in general;
- that participation by Czechoslovak institutions in international EE programmes be promoted and extended;
- that a full report on the Tbilisi Conference, containing as well suggestions on the application of its recommendations in educational processes, be published shortly; and
- that the use of modern scientific results and methodologies be fostered together with an ongoing analysis of results obtained through international and bilateral cooperation, specially within the framework of Unesco, the Council of Mutual Economic Assistance (CMEA), and other international organizations.

The Recommendation of the Czechoslovak Conference has been presented to the country's Environmental Councils – and through them to the respective governments of the Czech and Slovak Socialist Republics – and to all bodies, organs, ministries, institutions, national committees, etc., concerned about environmental education, as a basis for their future work in this field.

West Africa

A seminar on the development of instructional materials for the environmental education of adults in West Africa was held in Dakar, Senegal, 25 September-6 October 1978. It was organized by Unesco in cooperation with the Senegalese Ministry of Urbanism, Habitation and Environment. It constituted the *first phase* of a pilot project undertaken by the Government of Senegal in coliaboration with Unesco and UNEP.

Delegates of six West African countries (Ivory Coast, Mali, Mauritania, Niger, Senegal and Upper Volta) as well as representatives of Unesco, the World Health Organization (WHO) and the Environment Training Programme known as ENDA participated in the subregional seminar. Work groups and discussion turned around these themes as the most likely subjects of instructional materials:

1. Ways of cultivating and managing harvests
2. Improvement of village health
   a. nutritional improvement based on local resources
   b. drinking water
   c. environmental health
3. Deforestation and degradation of the environment
4. The usefulness of animal protection

The *second phase* of the pilot project has begun. It consists in the application and testing of the instructional materials developed at the seminar in the villages of Senegal by a number of national teams, their subsequent improvement and finally their adaptation to the countries of West Africa for use among the adults of the population. The French-language final report of the subregional seminar may be obtained by writing to Unesco's Regional Office for Education (BREDA), B.P. 3311, Dakar, Senegal.

Other Activities

Nordic Cooperation in Environmental Education

Cooperation of the Nordic countries (Denmark, Finland, Iceland, Norway and Sweden) in environmental education goes back to 1974. At this time a project was initiated by the Secretariat for Nordic Cultural Cooperation (an organ of the Nordic Council of Ministers) with the aim of promoting instruction in environmental protection and respect for nature, initially for primary school pupils, grades 1-6.

The project represented an innovation in Nordic educational cooperation partly because it combined educational research and development with a joint Nordic teacher-training course and a national postgraduate training of teachers coordinated with the development of instructional materials for primary-level education.

In parallel with plans for the environmental education of younger grades, steps were taken to compile Nordic materials for grades 7-9, each country contributing equally for this purpose. The following thematic headings might be mentioned by way of illustration of the materials developed: (1) ecosystems, (2) recycling, (3) pollution control, (4) open-air life, (5) why do towns grow, and what does urban growth lead to?, and (6) energy consumption and energy sources. Work on these materials was the subject of two courses for Nordic instructors in 1977, which formed the basis for national courses gradually to be introduced in primary schools throughout Scandinavia. The material has been translated and adapted for use by the respective countries and has, in fact, already been introduced in many schools of Norway and Sweden, the others to follow within a few years.

Preparatory work has proceeded in 1978 with the same type of environmental education for pupils at the gymnasium level (senior grades of grammar school). Working methods have been the same for the primary level with development of teaching materials and courses for Nordic instructors. As for advanced education, a conference was held in summer 1976 to discuss environmental education for universities and colleges. The conference report was published as part of the Nordic series "Environmental Education at Universities and Colleges of Technology". Steps to initiate Nordic cooperation in this field have been announced for the end of 1978.

Two English-language brochures prepared for the Tbilisi Conference are available on request: (1) a guide for teachers at the primary-school level, entitled "Environmental Education in Nordic Compulsory Schools", and (2) a publication, entitled "Environmental Education in Nordic Countries", which presents a general account of the Scandinavian situation. They may be had from: Nordic Council of Ministers, Secretariat for Nordic Cultural Cooperation, Snaregade 10, DK-1205, Copenhagen K, Denmark.

Pilot Project in Environmental Education for the State of Madhya Pradesh, India

A workshop launching a year-long project in environmental education for the State of Madhya Pradesh, India, was held at the Regional College of Education, Bhopal, 10-16 August 1978. Sponsored by the All India Federation of Educational Associations and the Education Department of the Government of Madhya Pradesh, in collaboration with Unesco, the World Confederation of Organizations of the Teaching Profession (WCOTP) and the Canadian

Teachers Federation, the project aims at developing instructional materials in environmental education primarily useful in rural schools and out-of-school education. The objectives are:

- to provide a model for India and possibly other Asian countries with similar conditions;
- to promote an integrated approach to a renovated primary school curriculum;
- to help orient teachers in agriculture-based environmental education and to adapt the project materials according to different ecozones and rural needs;
- to develop a teacher-based strategy for increasing public awareness of the environment and so help change attitudes and behaviour;
- to involve teachers, educational planners and others in designing the curriculum and materials so that they find acceptance by all concerned;
- to share the total process with educators of other countries.

Two Developments of Interest to Environmental Educators

The following news items of interest to environmental educators are taken from Development Forum, *November-December 1978, which is published by the United Nations' Centre for Economic and Social Information:*

Ecology makes it in Colombia ...

BOGOTA (WER) – A new decree by the Government of Colombia directs that teaching of ecology and protection of environmental and natural resources must be introduced in all the country's educational institutes; and establishes a National Environmental Service in Colombia principally to teach Colombians about ecological issues and their solutions, in accordance with the special needs and characteristics of the region.

The Ministry of Education has meanwhile set up, jointly with INDERENA (the National Institute for Ecology and Natural Resources), an advisory commission to select ecological subjects for the teaching curricula at every level of the Colombian educational system.

The decree has also empowered the Colombian Institute for Furthering Higher Education to help organize university seminars on ecology, environmental management and renewable natural resources.

... and in India

NEW DELHI (WER) – For the first time in the history of India, the Government is insisting that all major development projects be cleared on ecological grounds. The National Committee for Environmental Control, at the insistance of India's Planning Commission, has issued guidelines for preserving the ecological balance. In future, dams, power stations, highways, railways, open mines, and similar projects will have to be cleared from an ecological angle.

A committee consisting of scientists and technicians will examine each project and suggest modifications, if necessary. Such steps were found necessary because of the increasing air, water and noise pollution. Recently a government committee reported that the water in New Delhi is so badly polluted that it should not even be used for watering gardens.

Publications

A number of Unesco publications has appeared of special interest to environmental educators:

Prospects, quarterly review of education, Vol. VIII, No. 4, 1978, is largely devoted to the theme: Educating for a better environment. The breadth and depth of its "dossier" are best indicated by the table of contents: "Environment and development – key concepts for a new approach to education" (Ignacy Sachs); "Stockholm to Tbilisi – the evolution of environmental education" (Peter J. Fensham); "Environmental education and the Third World" (Leopoldo Chiappo); "Environmental education – theory and practice" (Daniel Vidart); "Interdisciplinary and environmental education" (Antonio Moroni); "An instructional model for environmental education" (William B. Stapp); "Environmental education and professional training" (Vladimir S. Romanov); "International cooperation for environmental education"; (Victor O. Ibikunle Johnson). Complete editions of *Prospects* exist in Arabic, English, French, Portuguese and Spanish.

Ecosocial Systems and Ecopolitics: a reader on human and social implications of environmental management in developing countries, edited by Karl W. Deutsch of Harvard University, is a 368 p. collection of articles by 22 international experts. Parts I, II, III, IV and V are respectively: Background; Cases; Politics, policies and problems of participation; and Prospects. "This is a book," writes Karl Deutsch, "about an emerging field: the field of ecosocial science and ecopolitics, that is, about the growing interplay of mankind's social and economic activities and its natural environment, and about the political challenges and decisions which this growing interplay produces or requires." At present only in English.

Growing Up in Cities: studies of the spatial environment of adolescence in Cracow, Melbourne, Mexico City, Salta, Toluca and Warszawa, edited by Kevin Lynch of the Massachusetts Institute of Technology, attempts to cover the environment of childhood and adolescence. It reports on a Unesco-sponsored project in which teams of researchers, all using the same guidelines and techniques in a wide variety of social settings located in Argentina, Australia, Mexico and Poland, interviewed small samples of young people (and also some parents and local officials), asking them to describe and map the spaces and territories where they live, work, play and study, or that they pass through or just "mess around" in. Photos and drawings. Exists only in English.

Où commence la Ville ? (Where Does the City Begin ?), by Yona Friedman, is all drawings and legends. "I have tried," says the author, "to explain the

urban phenomenon, to show that the city is not an isolated entity, but rather depends on the 'non-city', which is influenced in turn by the city." The folio-size brochure is free (write: Division of Human Settlements and Socio-cultural Environment, Unesco, 7, place de Fontenoy, 75700 Paris, France). It exists in French only.

For information about the purchase of the first three items, write: Unesco Bookshop, 7, place de Fontenoy, 75700 Paris, France.

Education and the Human Environment is a book-length report (published late 1977) of the Australian National Commission for Unesco Seminar held in May 1975. The major areas of discussion at this seminar, contained in the report, were: the interdisciplinary character of environmental education; styles of teaching and methods of school organization for environmental education; the provision and use of resources for environmental education; questions of evaluation and accountability in environmental education; and community/school relations in environmental education. The English-language report may be purchased in hard-cover or paperback. For information, write: The Curriculum Development Centre, P.O. Box 632, Manuka, ACT, Australia 2603.

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